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June
1926

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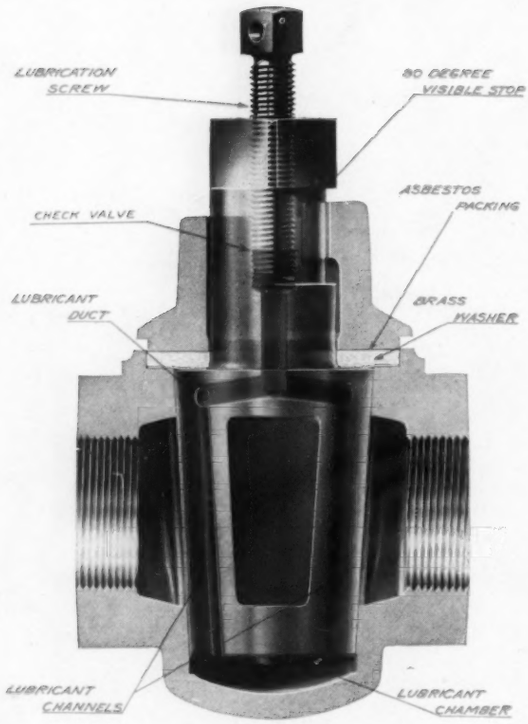

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May 14, 1926.

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Gentlemen:

We are happy to advise that we have today given Mr. Taylor, your San Francisco representative, our contract for a page on the inside front cover of Western Gas for the ensuing year. The results we have obtained from the use of Western Gas have been so satisfactory that this increase in our space is very well justified. As you know we have been advertisers in your publication since its beginning and have been greatly interested in its rapid growth because we have always felt that there was a real field for a publication of its type in the West.

With all good wishes for your continued success in the development of your magazine,

Yours very truly,

MERCO NORDSTROM VALVE COMPANY

BY Herbert Shuey
~~Secretary.~~

HSS:BFM

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Official Publication Of The
Pacific Coast Gas Association

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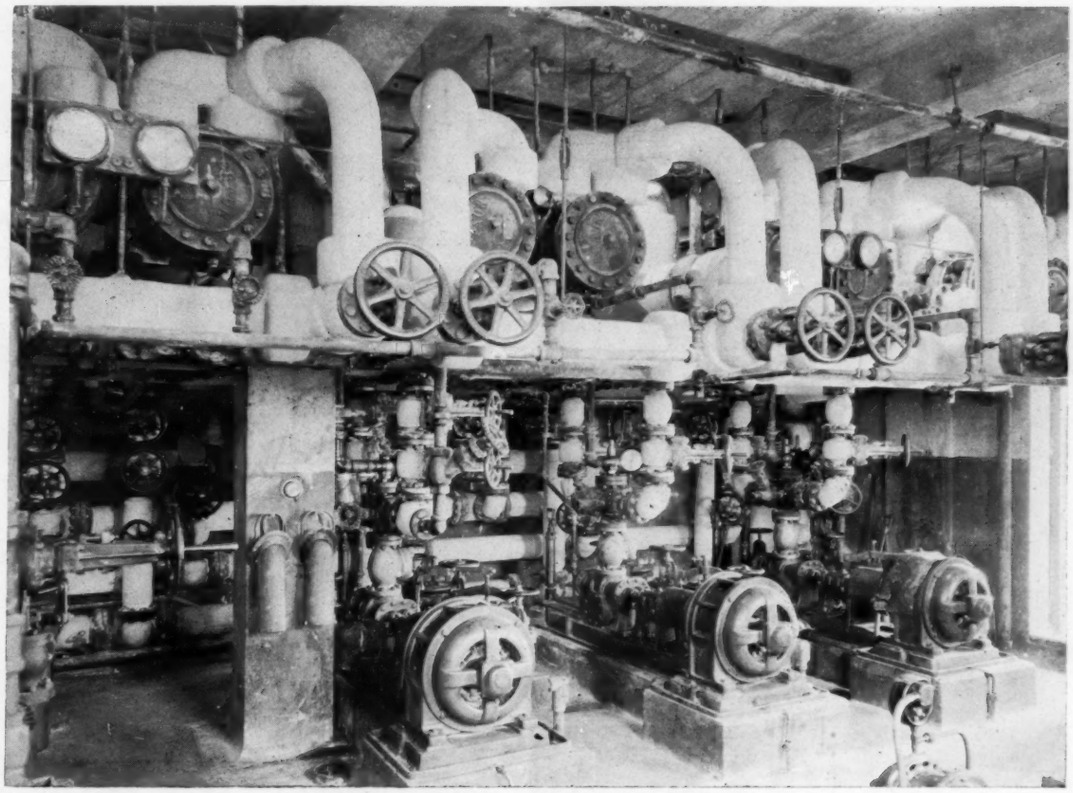

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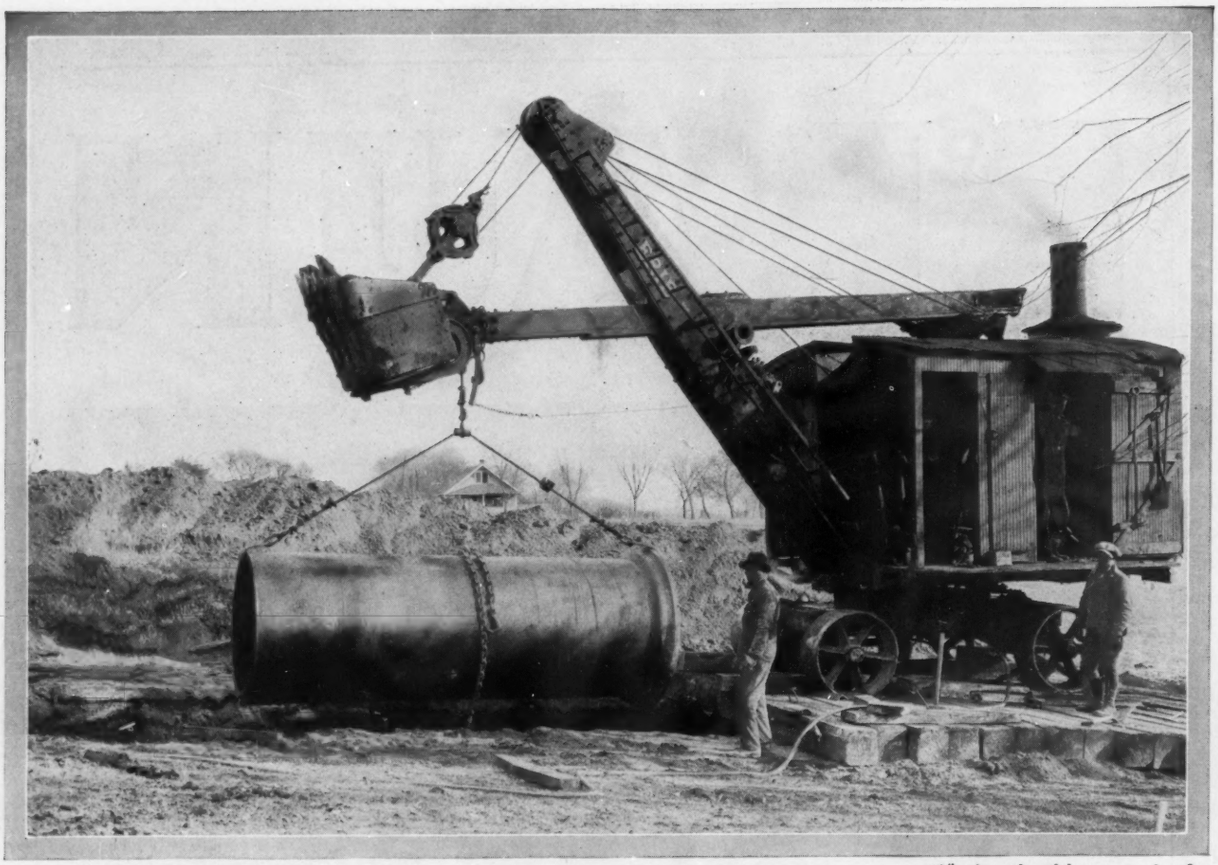

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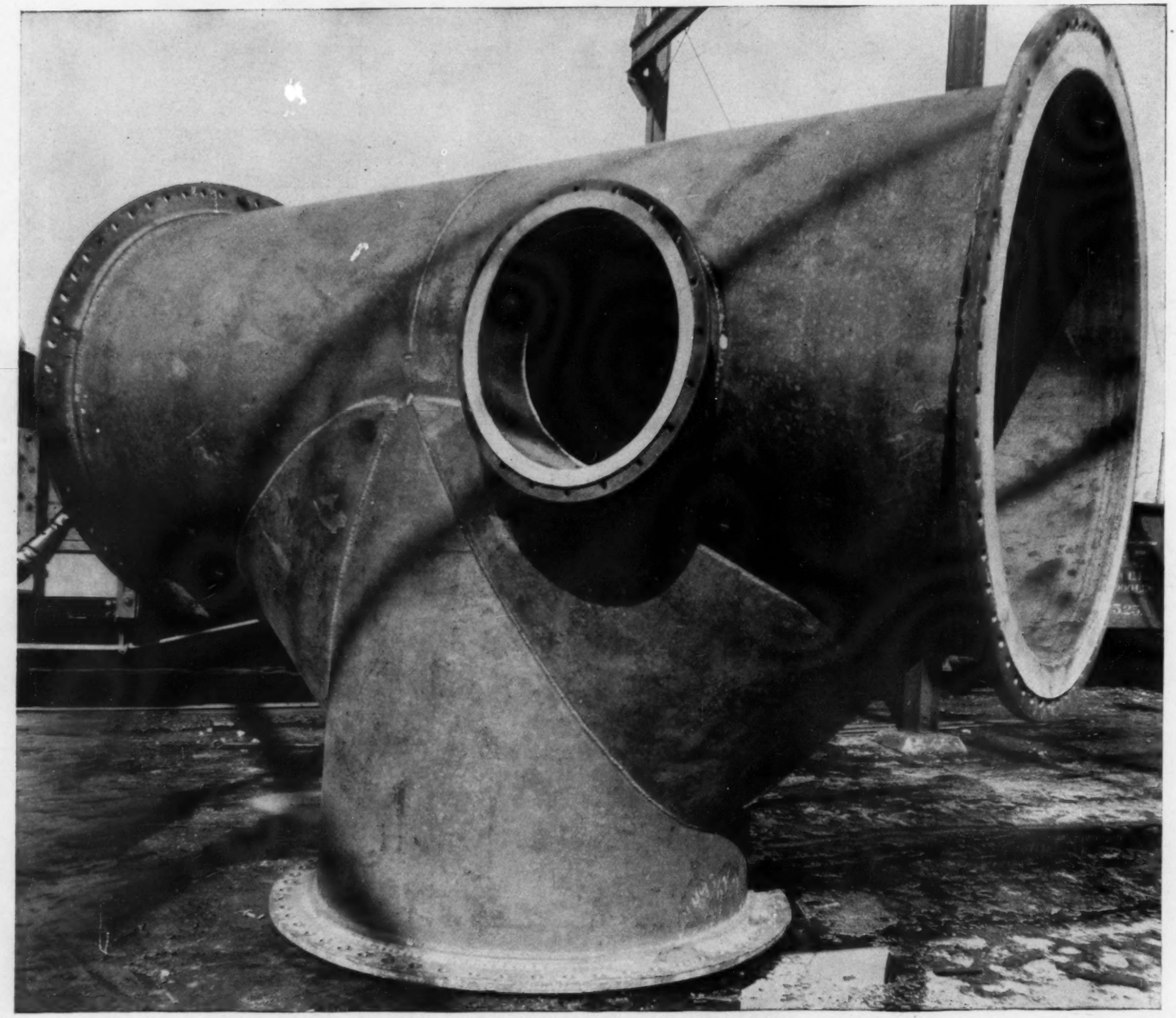

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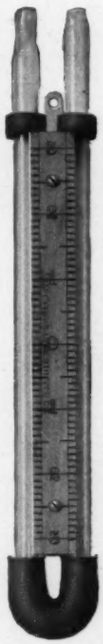

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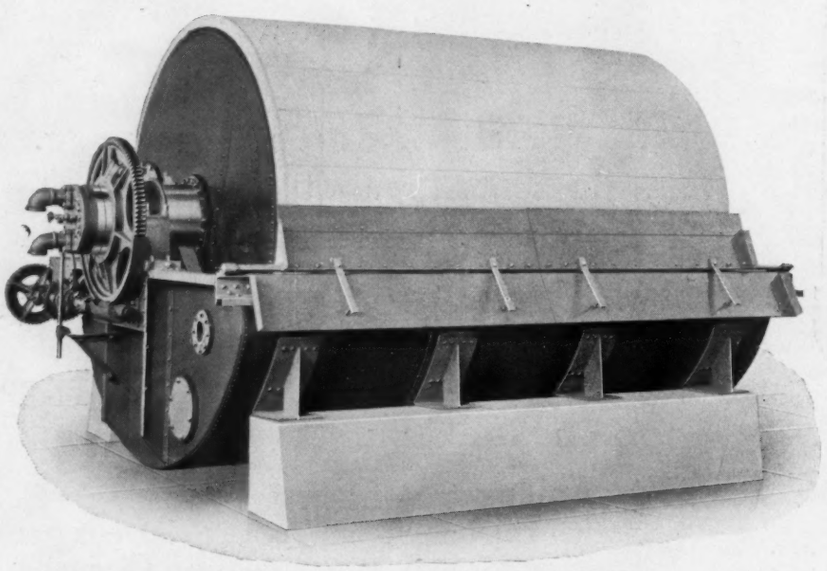

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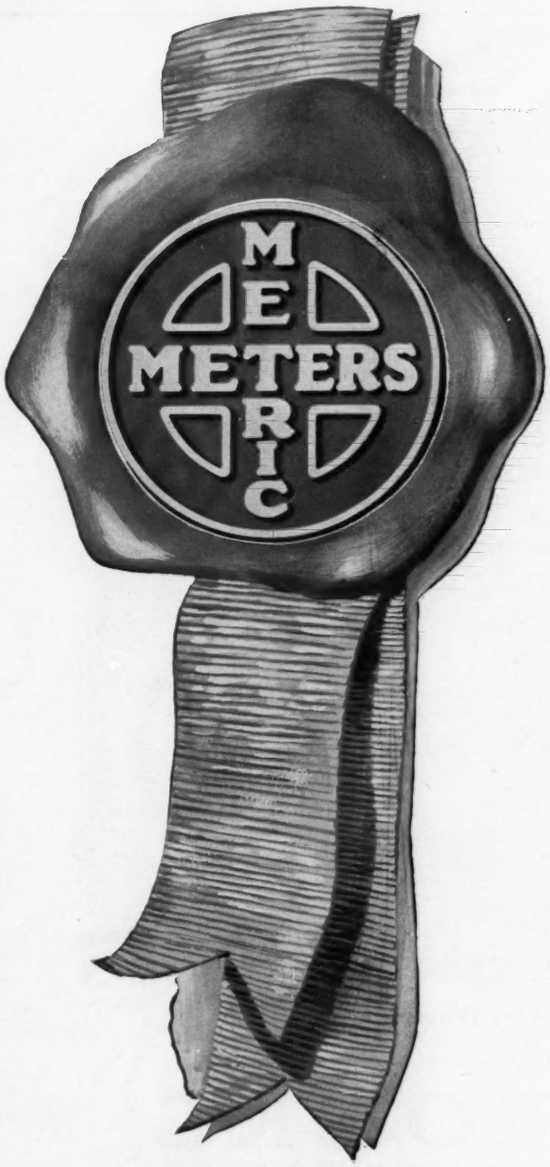
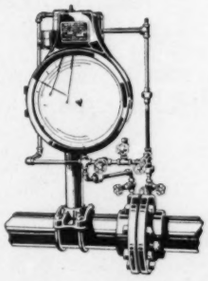


manufactured for use on the lease, in refinery and station service for the measurement of oil, gas, steam, and water.



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When you remove the chart from a Westcott Orifice Meter you have a record upon whose accuracy you can confidently rely.

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Literature fully descriptive of all types of Metric Meters will be gladly furnished

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of the American Meter Company-Inc.

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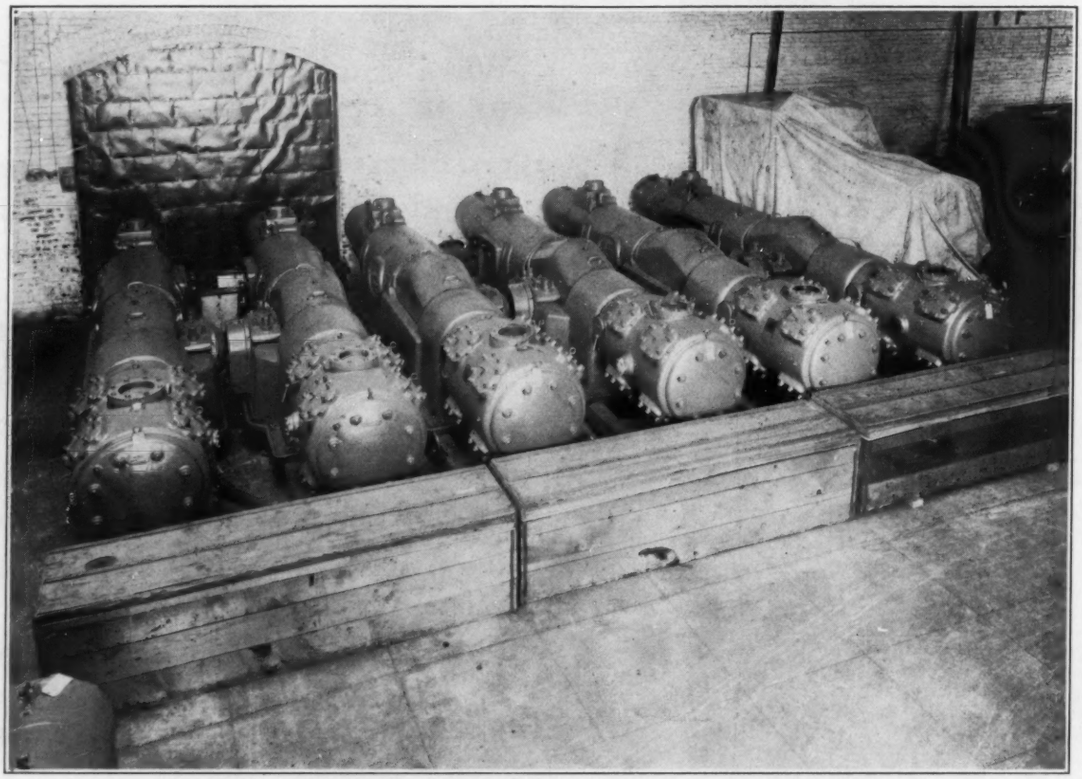
CLARKS



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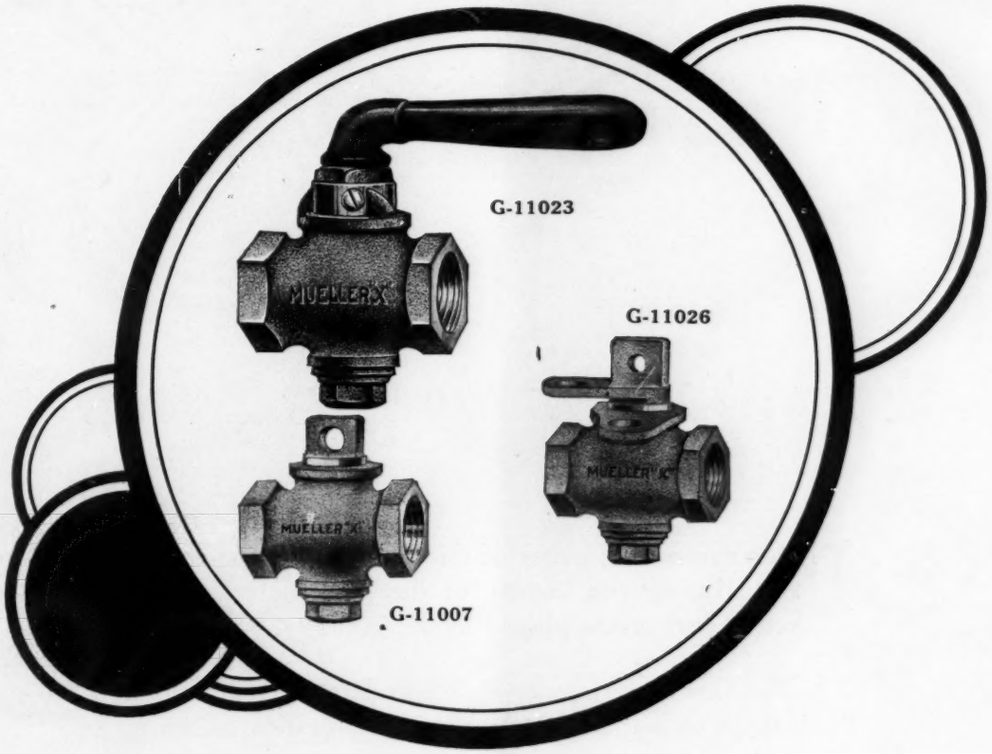

These stops are made to give lasting service---*and they do!*

To know that the stops you install can be depended upon for uniformly high quality, uniformly good construction and uniformly long service—that is your assurance when you standardize on Mueller brass gas stops manufactured under conplete laboratory control.

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IN the succeeding issues of this publication we shall set forth briefly the history of the Gas Meter and the active part it has played in the industry.

The Gas Meter, generally misunderstood by the public, instead of being of little or no importance to the industry, has been of inestimable value.

Without this ingenious piece of mechanism, which has served our complex business for approximately a century, we have grave doubts that the gas industry could have become the great commercial success that it is.

We shall endeavor to point out step by step the romance behind the Gas Meter, how, when and why it came into being. The first part of "The Story of the Gas Meter" will follow in the next issue.

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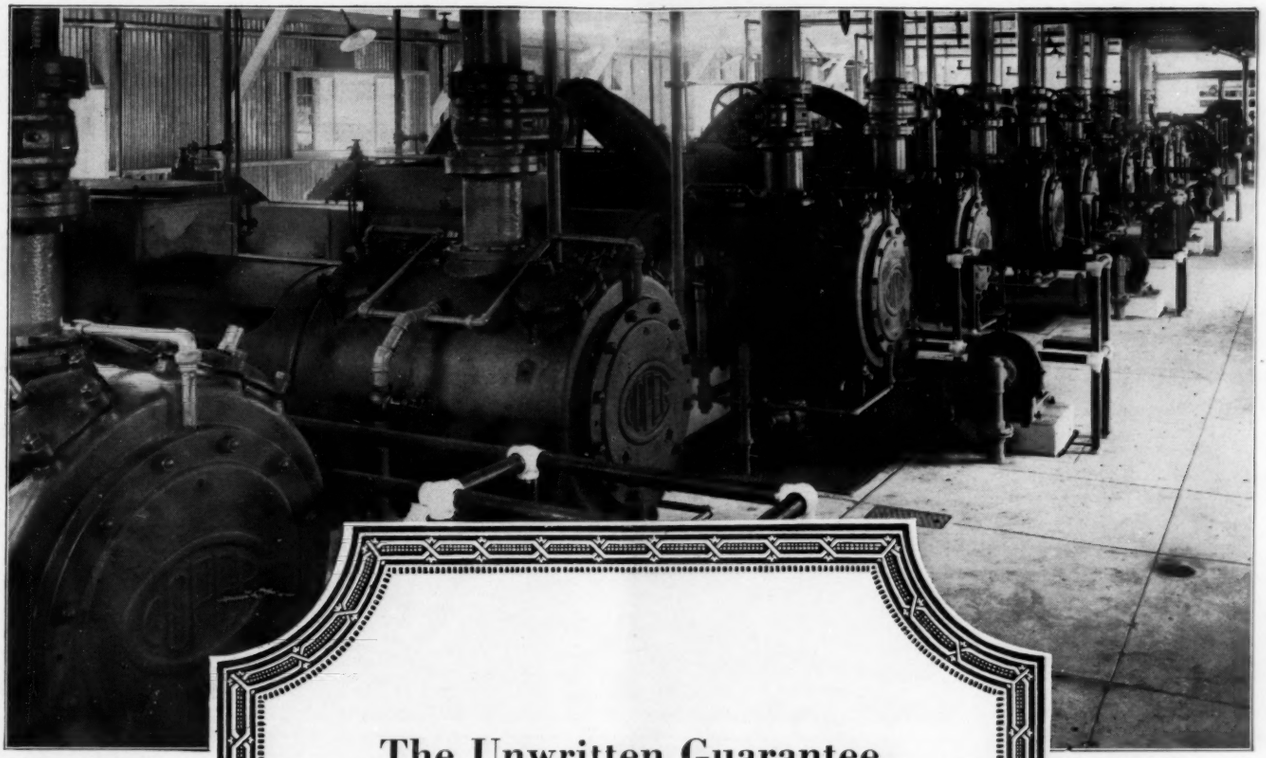

The above photograph shows Pacific Gasoline Company's Inglewod, California, Gasoline plant which contains 5 Cooper Type-75 gas engines.

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WESTERN GAS

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in the *Eleven Western States*

The Blue Star Plan

A Nation-wide Sales Program Which Promises Real Results

By RUPERT L. BURDICK
Secretary, Commercial Section
American Gas Association

DURING the past two years the Commercial Section of the American Gas Association has been endeavoring to prepare and present to the industry a simple, flexible and sound plan of gas and appliance selling which would build the domestic gas loads. Under the leadership of R. J. Canniff, chairman of the Section, this effort has borne practical fruit in the "Blue Star" Plan which is now being put into operation in a number of eastern gas company territories and which has already proved its merit. The following discussion of the plan is, necessarily, based upon eastern experience, but as this work is undertaken in western states suitable modifications to suit regional conditions can easily be made.

The Motive of the Plan

To appreciate the methods and results of the Blue Star Plan a moment's consideration of its aim and purpose must be given. Some gas companies are experiencing a real (even though slight) decrease in their domestic load; others are not increasing this share of their business as they wish; and concern is felt throughout the industry regarding the future of this basic load which aggregates about 70 per cent of the entire business. In order to protect the investment which this business represents, it is obviously necessary to make extraordinary efforts to maintain and further develop the domestic load.

Those who have studied this situation carefully have come to the conclusion that the lack of growth in domestic gas consumption is due not so much to competition of other fuels (although that is one factor), as it is the result of changed living habits of gas consumers and their present-day attitude of mind toward cooking and other phases of home-keeping which affect gas sales. Certain fashions of living; the efforts of the canned goods manufacturers; the lure of the hotel and restaurant; the rise of apartment house life; the desire for Sunday (and week-day) auto tours—all these and more are taking people away from home, and from the use of gas.

This is the Blue Star which places the stamp of approval on gas appliances.

Creating a Fashion for Gas

To counteract this trend of mental habits and living conditions two essential ideas must be developed in consumers' minds: The great comfort and convenience of truly *adequate* gas utilization in the homes; and the satisfaction and safety which high grade gas appliances provide. In other words, a new conception (almost a new fashion) of gas service and its value needs to be instilled into the public's thoughts.

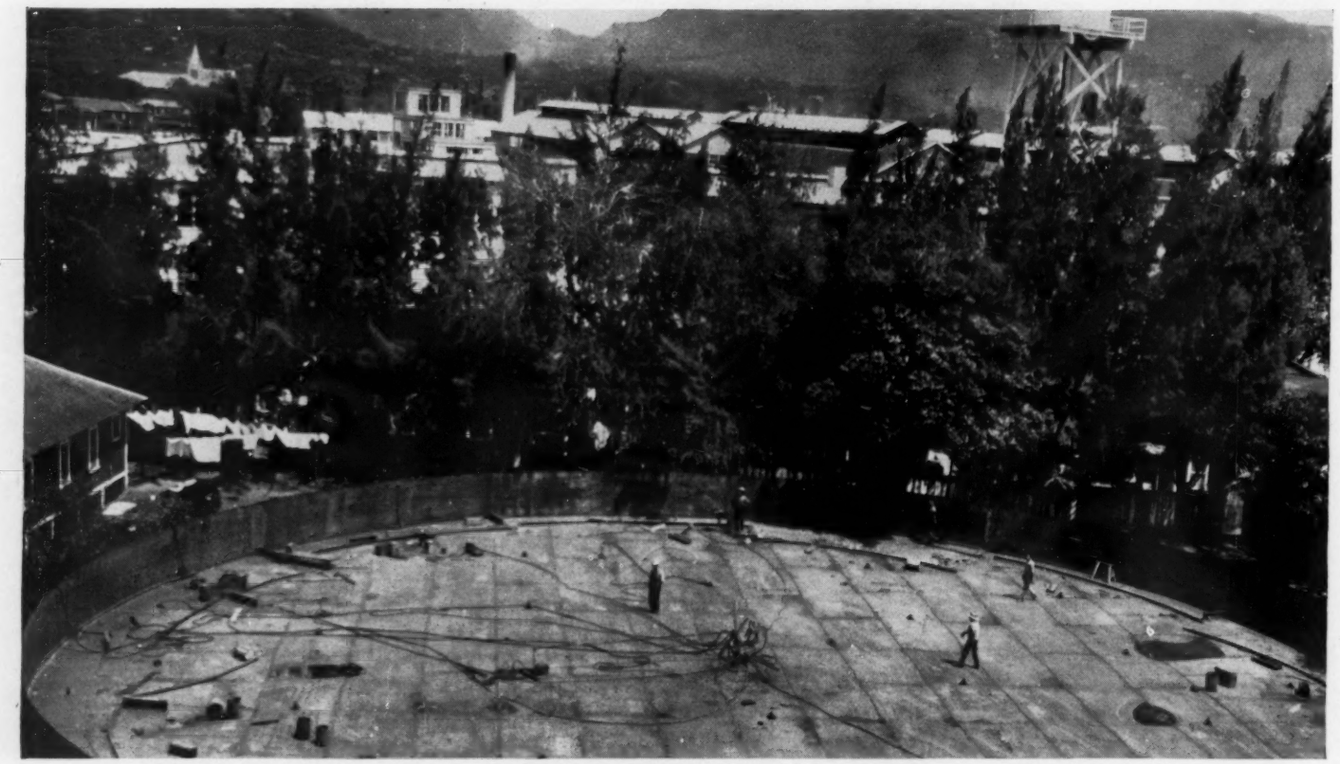
It is well known to everyone experienced in gas sales that high quality appliances give greater satisfaction to the user than poor appliances and that therefore such appliances open the way for greater use of gas in the home than is possible with less satisfactory appliances. But even further than this, good appliances create a pride of ownership in the mind of the householder which acts to increase neighbors' and friends' desire for similar quality appliances. Heretofore the attractive electrical appliances have held the eye, and have been the pride of home-keepers, while gas appliances have been considered from a purely prosaic and utilitarian standpoint. Properly exploited, gas appliances may be made as much the pride of the house as any other home equipment.

In addition to the appliances themselves, it is equally important to create in the consumer mind a better conception of more adequate and varied utilization of gas for home purposes. Owing, perhaps, to the piece-at-a-time method of appliance selling which has characterized our previous sales effort, the householder does not think of gas equipment as a unit in the same manner as he or she considers the plumbing equipment. There should be fixed in the homeowner's mind (and especially in the case of the home *builder*) the desire for a complete installation of piping outlets, flues and of appliances to give the many and varied comforts of domestic gas service. Only then can the gas industry realize its full sales possibilities for domestic business.

Trade-marking an Idea

It is almost an axiom of the sales and advertising business that an abstract idea —such as quality or adequacy—is much more difficult to "sell" than a tangible obect such as a piece of metal or cake of soap. Hence to exploit the two ideas

(*Continued on Page 34*)



Beautification of holder sites is a minor problem with the Honolulu Gas Company, Ltd., as this construction view of the company's million cu. ft. holder shows. At the background of the picture is the famous Nuuanu Pali, from which distant shores of the Island of Oahu are visible. Cottages like that shown at the left are provided company workers rent free.

A Gas Works *in the* Midst *of a* Tropic Garden

By E. S. JONES
Honolulu Gas Company, Ltd.
General Superintendent

Introducing the Honolulu Gas Co., Ltd., a Western Out-Post of Modern Gas Service

GAS service in the West is by no means confined to the mainland, and readers of *Western Gas* may be interested to know that a modern oil gas plant and distribution system is meeting the domestic and industrial needs of Honolulu, principal city and capital of the Territory of Hawaii. The operation of a gas utility in the tropics has its "different" phases, but the Honolulu Gas Company, Ltd., is nevertheless meeting its problems to the eminent satisfaction of some 11,000 consumers.

The present discussion will skip lightly over the more technical points of oil gas manufacture as practiced in Honolulu and will attempt to bring out the features of our operation which differ from mainland conditions. An introductory word or two on the Territory may not be amiss.

The Hawaiian Islands, situated approximately 2,100 miles from the mainland, consist of eight main islands, Oahu, with Honolulu the main city; Hawaii, the largest of the group, with Hilo the principal city; and then Maui, Kauai, Molokai, Lanai, Kahoolawe and Niihau in their order of importance. The estimated population of the group in 1924 was 307,100, with the city of Honolulu having over 101,000, not including the Army and Navy, which will add some 30,000 more.

When E. S. Jones embarks for the Mainland to attend P.C.G.A. convention sessions, he wears more than his share of Hawaiian leis.

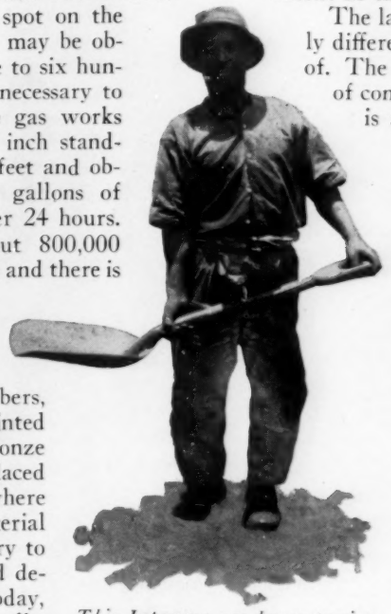
In Honolulu, where our company is located, a considerable load has been built up through residential and industrial demands. Gas is also installed in nearly all the large Army Posts, including Fort Shafter General Headquarters, Fort Ruger, Fort DeRussey, Fort Armstrong and others, and we expect shortly to be able to extend service to the large inland post of Schofield Barracks where the Hawaiian Division is located, with equipment for some 20,000 men. This would mean a high pressure line 30 miles long, and would almost double our send out of an average of 1,300,000 cubic feet daily.

The writer has had the rather unusual privilege, for a gas engineer, of being able to erect a complete new plant at Honolulu with adequate ground space, so that each unit could be placed exactly where it would be most economical and convenient for operation in

connection with the remainder of the plant. The construction program called for a new 12-foot "Jones" improved Generator with primary and secondary scrubbers, necessitating an extension to the generator building. Two new boilers were added, one 352 H. P. Sterling, the other a 250 H. P. B. & W., two concrete lampblack separators were constructed and the overflow from washboxes is inside of washboxes, going down underground and rising and emptying into separators. This novel idea eliminates ditches and pumps and keeps the lampblack where we want it. Additional exhausters were purchased, of the G. E. centrifugal compressor type, directly connected to Curtis turbines. All piping had to be changed from various small sizes to 24 inches. The 50,000 cubic foot relief holder was cut out and made into an oil tank, and the 200,000 cubic foot storage holder cut in as a relief holder. All these, of course, necessitated new 24-inch piping, foot bends, valves, drips, etc. A new million cubic foot storage holder was erected by Cruse-Kemper Company. A positive type Roots station meter was connected to the inlet of the new holder. It was also necessary to at once install a large Ingersoll-Rand compressor, with cross compound steam cylinders and double acting duplex gas cylinders to handle the increased consumption. Many accessories were also necessary, such as pumps, hydraulic system, lampblack cars and track, and several buildings were relocated. While all this construction was going on it was necessary to operate the old plant and at the same time try to increase efficiency.

Roads were made of coral, which, although white, makes a wonderful road when rolled hard. In speaking of coral, it may be interesting to know that all foundations are on reef coral. The generator and holder foundations, carrying more than a ton to a square foot, necessitated an excavation of from two to six feet, and laying a light reinforced concrete pancake on this coral without using a pile. Concrete, in many instances was poured under water, as sea level is close to the surface. This wonderful condition is added to when one realizes that at almost any spot on the islands, fresh water may be obtained at from three to six hundred feet. It was necessary to drill a well at the gas works and we drove a 10 inch standard pipe down 682 feet and obtained two million gallons of clear fresh water per 24 hours. We are using about 800,000 gallons per 24 hours, and there is a 10 pound pressure on the suction of the pumps.

The buildings, generators, scrubbers, etc., have been painted with aluminum bronze and the gardens replaced or planted new, where construction material had made it necessary to remove them, or had destroyed them. Today, the plant has all walks and roadways outlined with Hibiscus hedges of some 20 varieties. The single and double flowers range from a pure white to a deep red, including all the shades of pink and yellow. Large areas of lawn with fish ponds and every type of tropical flowers are in bloom, as well as scores known on the mainland. This being the land of flowers, it is very easy to arrange a border of carnations, or other flowers which in the States are of the semi-hothouse class. The bougainvillea vines and the yellow alamander were nearly all destroyed, but have again started on trellises and will soon be a riot of color blooming nearly all the year round. A great many palms are in the yard, cocoanut, date and other varieties as well as rare sago palms growing to 25 feet in height. A large number of banana trees are growing across the road within 30 feet of the scrubbers. We have tried to carry out the Japanese effect to some extent in the landscape gardening.



This Japanese gas house terrier is typical of the working force of the company.—"A-No. 1" worker, too, is Mr. Jones' testimony.

The labor situation is undoubtedly different from any plant I know of. The master-mechanic in charge of construction and maintenance is a white man, born in the Islands and incidentally the only white man at the Works. The gas makers are Hawaiian, Hawaiian - Chinese and Hawaiian-White. The gas makers' helpers, boiler firemen and oilers are Japanese, Korean and Filipinos. For labor, we must depend on Filipinos originally brought in for plantation labor. Their contract term expiring, they drift into town and work on the streets or at anything they can get. It takes very little to support the majority of Filipinos, and it is not unusual on Saturday to pay off from two to three hundred men in the distribution department, when we have been laying a main, where the labor never exceeded 75 men a day. This of course, is very unsatisfactory, but must be put up with in a semi-tropical climate, where a house for these people to live in is never actually necessary the year round. Also the food is light, easily obtained, and the climate slightly enervating to all classes. It is said of the tourists that when they first arrive they just sit and think, and after a while they just sit; however, we seem to accomplish the necessary amount of work, although a situation that is an emergency is something to be dreaded.

The distribution system is high pressure; pressures vary at the plant from 35 pounds to 5 pounds, with a corporation cock at the curb in the business districts, and at the inlet to individual house regulators at meter inlet in the residence districts. There are no air heaters on the system. Water heaters and a good class of ranges are the equipment of our 11,000 consumers. A large industrial load helps materially, the largest being the American Can Co., which alone supplies all cans for the entire pineapple pack for several large companies, such as Hawaiian Pineapple Co., California Packing Corporation, Libby McNeill & Libby and others. The baking industry is also well represented; the largest firm, Loves Biscuit & Bread Co. has installed

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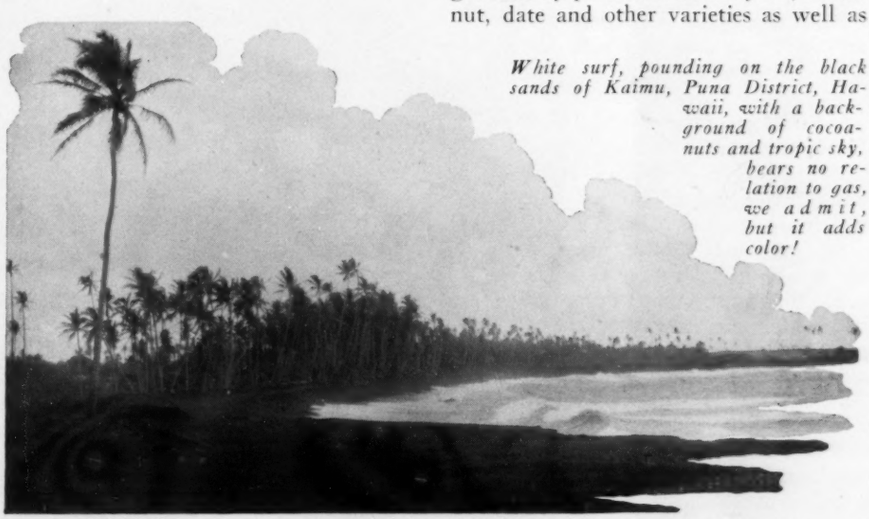
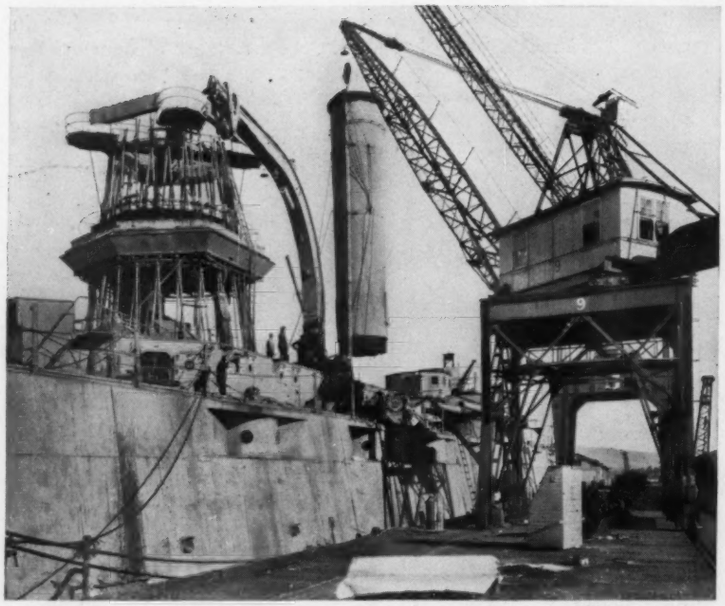


White surf, pounding on the black sands of Kaimu, Puna District, Hawaii, with a background of cocoanuts and tropic sky, bears no relation to gas, we admit, but it adds color!



Obsolete battleships are cut up and scrapped by manufactured gas instead of by acetylene at the Oakland, Calif., shipyards.

Harnessing Gas *to the* Varied Demands *of* Industry

Manufactured and Natural Gas both Serve in Industry's Train. Former is Put to a Wide Range of Uses in San Francisco and the Bay District.

By J. H. GUMZ
Industrial Gas Engineer
Pacific Gas and Electric Company

THE industrial use of gas, even though it has grown to considerable proportions, is still a comparatively unimportant means of heating when measured against other fuels. Recent statistics show that the heat requirements of industry are met by fuels approximately in the following proportions: manufactured gas, 2 per cent; natural gas, 4 per cent; anthracite coal, 5 per cent; oil, 12 per cent; coke, 14 per cent; bituminous coal, 63 per cent.

The use of manufactured gas is the lowest on the list, but when it is appreciated that the two per cent of the fuel used by industry represents something like twenty per cent of all the gas manufactured in the United States the amount is not so small. Throughout the country there is annually used approximately eighty billion cubic feet of gas for industrial purposes. In revenue this amounts to some $80,000,000 annually for gas companies. Any class of business representing an annual expenditure of $80,000,000 must of necessity be regarded of primary importance. This is not only from the viewpoint of the seller but, also, from that of the buyer.

American industry is today conceded to be well in advance of that of the world in general, due in part to world economic conditions and in greater part, perhaps, to the ability of the men running it. Therefore, if our industry is what it is, due to the ability of its men and these men see fit to spend $80,000,000 annually for gas, it is a natural conclusion that such expenditure is profitable.

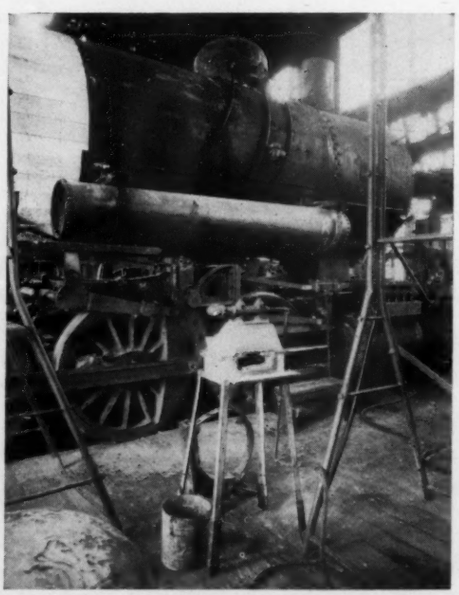
With such a large and extensive use of gas by industry almost everyone must more or less directly come in contact daily with some phase of the gas use or with the finished product of it. It might be of interest to consider a few commonplace things which we are apt to take for granted without a passing thought of the possible part gas may have played in their production or preparation.

Let us say your morning coffee was roasted with gas and the bread for your toast was baked in a gas oven. Tiny needle-like gas flames permit electric light bulbs to be sealed after the air has been exhausted from them. The finish on your automobile was probably baked in a gas-fired oven and the many steel parts heat treated in gas furnaces so they would have a maximum strength and life. The bottle in which the cream for your morning coffee came may have been heated with gas as it was being made or, if you use condensed cream, the can from which it was poured certainly was made with gas.

These are just a few of the over 2,000 different uses to which gas is put in industry and more are being developed each day.

According to the records of the Pacific Gas and Electric Company, at the end of 1925 some 4090 consumers made use of gas for industrial purposes. These 4090 consumers represent slightly more than one per cent of the more than three hundred and sixty thousand consumers of all kinds being supplied with gas by the company. On an average, each one if these consumers is more than twelve times as valuable to the company as the ordinary domestic consumer. Some are tremendously more important than this however. One consumer in San Francisco each month uses as much gas as is used by many small towns having a population of ten or fifteen thousand.

Fuel surveys made in the territory served by the Pacific Gas and Electric Company indicate that if only as small a portion as five per cent of the heating requirements now being supplied by fuels other than gas were converted to gas, the total gas sales of the company would be more than doubled. Obviously, such a



Rivet heaters used at the Western Pacific Railway shops at Sacramento are gas-fired.

conversion cannot be easily brought about nor can it be secured without a great deal of sales and engineering work. Incidentally, it should be born in mind that this change to gas involves a change from a relatively cheap and crude fuel to one that is refined and expensive. This, together with the natural prejudice against change, makes the sale of gas highly competitive and difficult.

As in all competitive business, consideration must be given to the price of the competitive article and, also, the price the user can afford to pay. This means that study must be made toward the establishment of rates which will permit a freer and more extensive use of gas. Naturally, lower rates must be based on lower operating costs but, generally speaking, under existing regulations governing a fixed rate of return on capital investment, the inducement for gas companies to do research work in order to lower operating costs is eliminated. Unless gas companies can retain and share at least part of the savings resulting from lower operating costs we can expect but limited efforts to improve operations and so lower rates. The whole tendency of the day, however, is for regulating bodies to recognize the competitive feature of the gas business and that initiative can not be expected without a due reward.

Among the more than four thousand industrial users of gas supplied by the Pacific Gas and Electric Company are some who make rather unusual use of it. For example, in several shipyards wooden hull ships are periodically placed in dry docks for inspection and painting. In the ordinary course of use, some of the paint is scraped from the hull of the ship, and wherever the wood is exposed under water the ship worm or teredo begins its destructive work. All that is visible on the outside is a small hole, but the worm in time will completely honeycomb a timber without coming to the surface. Before painting over the holes a gas torch is played on it, and as the wood is well water soaked steam is quickly formed, which, penetrating the hole, soon ends the career of the worm..

Another use made of gas is to reduce lead ore. Gas is passed through a heated retort in which there is a quantity of this ore. The carbon in the gas combines with the oxygen in the lead ore, leaving pure lead. Several consumers make use of a process somewhat similar in making the surface of steel very hard. In this case the steel is heated in a retort to about 1750 degrees Fahrenheit and gas is brought in contact with it. The steel absorbs some of the carbon from the gas and this surface absorption makes a skin of very hard and brittle steel, while the inner portion remains softer and tough. Most automobile gears are treated in this manner. In making castings in foundries a mold in sand is made from a pattern, and usually the surface is dried with a gas torch. If the sand were a bit moist the molten metal would cause the water to flash into steam with disastrous results.

Another interesting use made of gas is for drying barrels. To make the barrel staves retain their shape they must be steamed and bent to position and then dried. With the use of gas there is no discoloration and the barrel is ready for use without the need of cleaning. Cleanliness is an important factor if barrels are to be used for sugar and like products.

In California a State law provides that before a second-hand mattress or pillow can be sold it must be sterilized with heat. A San Francisco concern has an ingenious gas-fired oven for doing this work.

Some of the more common uses of gas for industrial purposes in the Pacific Gas and Electric Company territory are for baking purposes. These vary from baking bread in wholesale quantities of 6000 loaves per hour to baking japan on automobile fenders. The coating of metal japan and the baking of it is well illustrated in a San Francisco factory making bed springs. The springs are dipped in the japan and after hanging over a drainboard for a short time are carried on an overhead trolley system into one of several ovens which are twenty-two feet long. Here high-pressure gas burners that are automatically controlled by a thermostat quickly heat the oven and springs to the desired temperature. After a predetermined interval the springs are run out of the far end of the oven and after cooling are ready for shipment.

The baking of cores in foundries in gas ovens is another use of gas which is quite general. One foundry has ovens equipped with temperature control devices so excessive temperatures are impossible. As this foundry does much of the core baking at night the ovens were also

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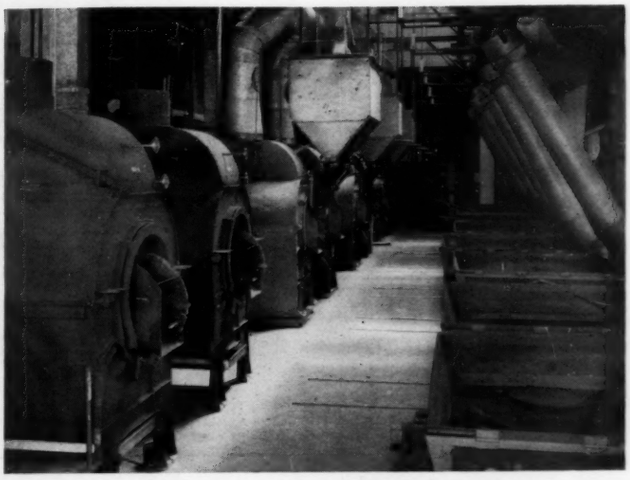
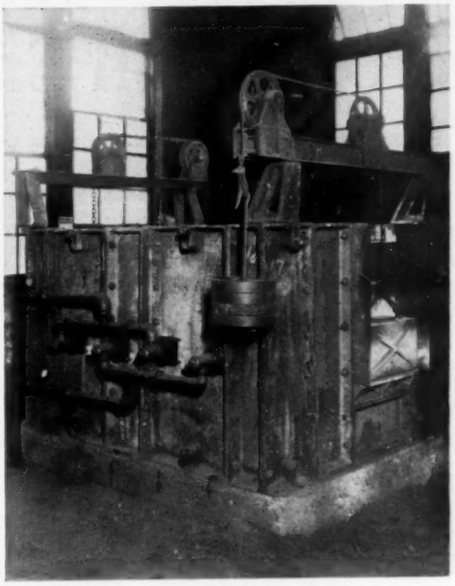
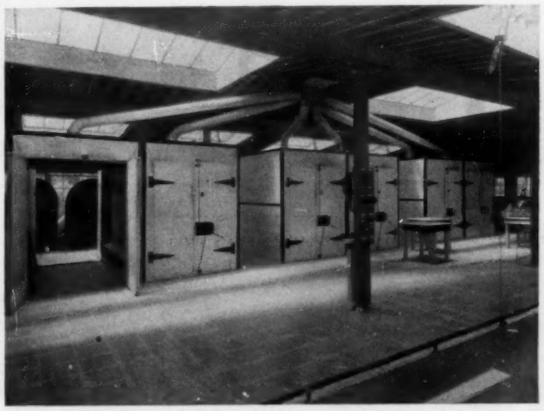




Above: Coffee roasters at the M. J. B. plant in San Francisco, gas-fired. San Francisco firms roast over 300,000,000 lbs. of coffee annually. Below: Locomotive spring furnace at Sacramento shops of the Western Pacific. Gas fuel is used.



Gas-fired japanning ovens used by the Magnovox Co. of Oakland, for finishing manufactured articles.

Sales group of Utah Gas and Coke Co. Mr. Angley, author of the accompanying article, is at center of first row.

How Shall Salesmen *be* Compensated?

Part I. Presenting *the* Flat Salary *and* Bonus *on* Gross Sales Plan

By E. A. ANGLEY

General Superintendent, Utah Gas and Coke Company, Salt Lake City, Utah

Securing the right kind of salesmen —and keeping them—is an old problem with new business departments. Some favor one plan of compensation, some another. The present article by Mr. Angley introduces a discussion of this problem, a second article, written by George C. Sawyer, sales manager of the Pacific Power and Light Company, being scheduled to follow in the July issue of WESTERN GAS. Two plans of compensation will be dealt with in this series, Mr. Angley favoring the commission bonus on gross sales per dollars of merchandise sold, while Mr. Sawyer will espouse the cause of the flat bonus on each new customer secured.

IN presenting the following article the writer does not wish to pose as an authority, but merely aims to set forth his views and observations covering a long period of time, during which he has been active in the management of merchandising activities of this company.

The question of proper compensation for salesmen in the gas industry has been the cause of a great deal of experiment, with more or less failure or success. We must first consider that merchandising in our business is different from that of most mercantile concerns in that we have in addition to the problem of selling gas burning appliances, the handling of our product, "gas," which with the service we have to offer is the prime object of our business. Gas companies largely have been forced to sell gas burning appliances in order to assure their customers efficient, safe and lasting equipment, so at the present time we find merchandising gas appliances an important part of most every company's business. In consideration of these facts, we necessarily must operate a successful merchandising department; one that can justify its existence by showing a profit after all items of legitimate expense are charge to it, such as rent, salaries and commissions of supervisors, clerks and salesmen, light, heat, cost of appliances, cost of labor and material for installing appliances, all advertising, including newspaper, direct-by-mail, window and miscellaneous advertising, all utility equipment expense, miscellaneous expenses, bad accounts, and interest on money invested in stock. Or to make a long story short, the new business department of a gas company should operate as though it were separate and apart from the regular business, as far as charges made to it, and profit and loss are concerned.

Salesman is Contact Man

One of the determining factors in the successful operation of a new business department is the method of compensating the salesman, taking into consideration the fact that he is to sell gas burning appliances, gas, and with it service. We must also consider that he is called upon to take various applications for service, settle certain differences between the customers and the company, instruct customers in the use of their appliances. In fact, he is the "Gas Company" to the great majority of our customers. He is the contact man and they judge the company by his actions and dealings. All of this, however, does not apply to the sales supervisor or the clerks employed in the new business department, whom we will first consider.

Supervisors: The sales supervisor must necessarily be a man of high calibre, one who is capable of properly selecting, training and leading men. He must have a thorough knowledge of the gas business and of the principles of merchandising. He should be compensated on a flat salary basis, in sufficient amount to enable him to maintain a reasonably high standard of living and contact.

Clerks: Clerks must necessarily be compensated on the flat salary plan, the scale to be on a par with what that class of work demands in other lines of business.

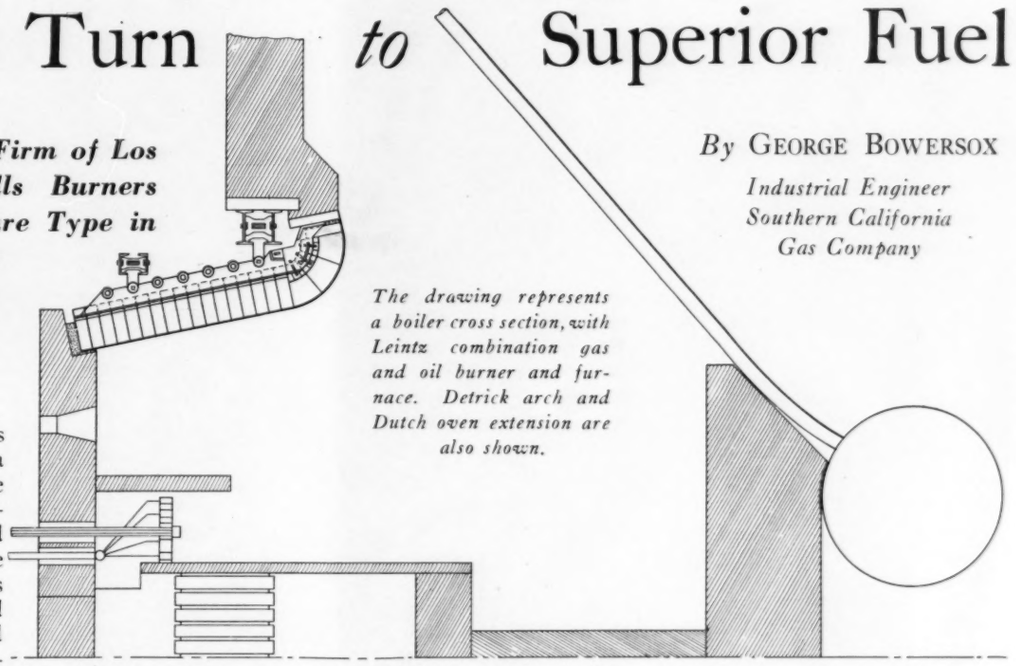
Floor Salesmen: Our experience is that floor salesmen should be compensated on a flat salary basis. It eliminates any incentive on their part to keep to themselves the names and addresses of non-purchasing customers calling into the office to look over appliances. If they receive no commission they feel willing to turn these prospects over to the territory man, so they can be closely followed and eventually turned into sales. Floor salesmen should be considered more in the nature of service workers than sales people, as most of the people calling in the office or appliance room have already decided to purchase.

(*Continued on Page 46*)

Another Industrial Triumph *for* Gas: Packers Turn *to* Superior Fuel

Meat Packing Firm of Los Angeles Installs Burners of Low Pressure Type in Reconstructed Boiler Plant

By GEORGE BOWERSOX
Industrial Engineer
Southern California Gas Company



The drawing represents a boiler cross section, with Leintz combination gas and oil burner and furnace. Detrick arch and Dutch oven extension are also shown.

PIGS is pigs but it takes gas to make them a palatable delicacy. The use of gas in the packing industry has been received unanimously. The first use of gas in a packing house was to fire the smoke houses and to hold them at a desired temperature, something heretofore impossible with a wood fire. The smoke house adaptation was so practical and convenient that some far-sighted fellow rigged up a device for singeing the hogs as they were carried along on an overhead track. And so the ball was started until now every pig, every sheep, every calf, every cow is gas-fired.

Gas Invades Boiler Field

From the smoke-house and the singeing process the gas was turned to as a boiler fuel, and the riddance of smoke, the ease of control, the convenience of handling, and the economy of the fuel proved to the packers that gas is all that has been claimed for it. The boilers furnish steam and hot water for refrigeration, scalding, washing and pumping water.

Wilson & Company recently rebuilt their boilers and installed Lientz low pressure combination gas and oil burners and Detrick arches in the Dutch ovens. This boiler plant consists of two-150 H.P. and one-300 H.P. Sterling Boilers. These furnaces and boilers have sufficient burner capacity to easily handle 200% rating with no smoke.

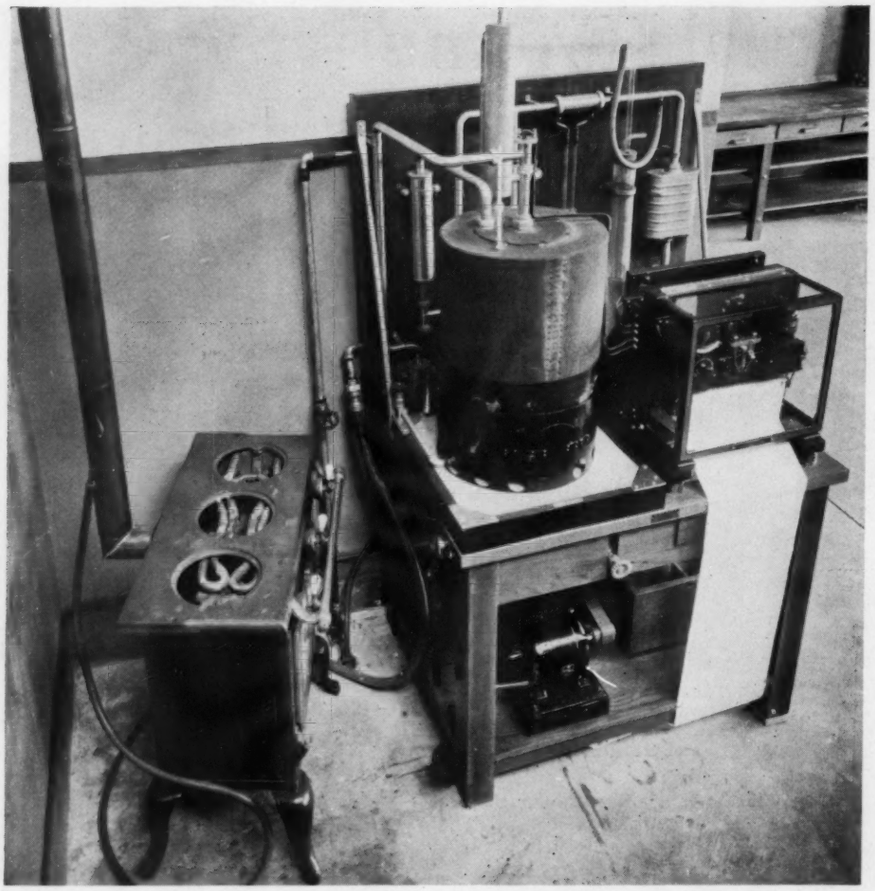
The Lientz low pressure combination gas and oil burners have been adapted by the Wilson & Company as standard equipment. Each gas burner consists of 47-¼" pipes, each leading from a gas pipe manifold to the center of 3" holes in a heavy iron plate. One hole in this plate is reserved for the steam atomizing oil burners. The air for combustion is taken in under the furnace deck, then splits and comes back and up behind the burner plate and mixes with the gas at the burner tips. The combustion air is heated to about 400° Fahrenheit. The amount of air supplied can be regulated by the damper in the stacks or an arrangement to limit the air going into the furnace. There is an arch over the burner to support combustion as the radiant heat raises the temperature of the carbons in the fuel more quickly than the heat radiated from combustion. The advantage is that complete combustion has taken place before the gases strike a cooler surface.

Arch is Innovation

The Detrick arch used in the Dutch oven is to some of us a new feature. Essentially, the Detrick arch comprises center grooved tile which are suspended by means of cast iron arch bars, from structural steel beams spanning the furnace and resting on the side walls. The advantages of this arch over other designs are that it allows adaptation of the flat arch principle and reduces to a minimum the expansion and contraction stresses encountered in keystone arches. The repairing of the arch is a simple matter as the tiles can be threaded off of the I beam hangers and only disturb the one row on which repairs are being made.

Two Wilgus Automatic Steam Pressure Regulators are used because the two 150 H.P. boilers are carried at a different pressure than the 300 H.P. boiler. The Wilgus Regulator is of the spring diaphragm type with a multiple port. This device reduces the gas supply to the boiler as the desired pressure is reached, but never shuts the gas entirely off; nevertheless, a pilot light burns continually in front of each burner. Due to the fluctuating load the gas will show its many advantages. As the load comes on the regulator opens, the steam pressure is maintained and the fluctuation is not perceptible, whereas other fuels require certain adjustments on changing load conditions if good combustion is to be maintained. Machines that are run on constant steam pressure will be in service long after the one that was subjected to pressure fluctuations has been replaced with new equipment.

The use of gas has eliminated the repairs on oil pumps and the cost of operating them. The gas is up to the valve and always ready to go—no worry about fuel deliveries. Gas requires no atomization, which on fuel oil requires from 1% to 5% of the steam generated. Refractories will show a much longer life when subjected to a gas fire than when oil is used. To start a fire from a cold boiler is a simple matter on gas, compared to the process with oil. The elimination of smoke has a more far-reaching effect than the doing away with the soot that comes in the office window and the immediate waste of fuel, because some of that soot produced in the furnace settles on the tubes and forms a heat insulator which reduces the boiler efficiency until it has been removed. In fact the installation of gas has improved everything in the power plant from general appearance to the disposition of the personnel.



This carbon monoxide recorder is one of the three of the same type in use in the gas industry. It is shown taking a sample from a gas cooker having water coils over the top burners

Laying the Carbon Monoxide Bogy

By E. L. HALL
General Superintendent, Portland Gas and Coke Company

FROM the beginning of time carbon monoxide has been an important factor in the reactions of the universe. Ever since there has been fire and carbonaceous material, this product of partial oxidation has been performing its valuable function in the scheme of things. Wherever carbon reacts with oxygen, carbon monoxide is formed during the process. It is a constituent of all manufactured gases, irrespective of whether the gas producing is done in a centralized plant or in a solid fuel stove or furnace. Carbon monoxide occurs in the intermediate stage preceding complete oxidation and the formation of carbon dioxide. The process of oxidation may be continuous, so that combustion is complete; or interrupted, so that carbon monoxide exists as a constituent gas for some time before the burning to carbon dioxide is finished. Since a cubic foot of carbon monoxide when burned to carbon dioxide liberates 323.5 B. t. u., it is obvious that carbon monoxide is a valuable fuel gas constituent. If proper oxygen supply, kindling temperature, or combustion space is not provided, the carbon monoxide may be dispersed without even having been converted into carbon dioxide.

The effect of this carbon monoxide when liberated in the presence of human beings is quite the reverse from beneficial, and for this reason it has received much unfavorable publicity in recent years. Among well-meaning but poorly informed people there has been talk of eliminating or limiting carbon monoxide poisoning in human society by wholly or partially doing away with this constituent of manufactured gas. This solution of the problem is not only uneconomical but impossible, even if a suitable elimination process could be worked out, for the reason that a study of sickness among human beings as a result of the presence of carbon monoxide shows that the formation of the gas almost invariably results from quite another cause.

Where Most of the Danger Lies

An overwhelming percentage of carbon monoxide illness is caused not by gas leakage but rather by incomplete combustion of solid, liquid, or gaseous fuel which contains carbon as a portion of the combustible.

The toxicity of flue gases from solid fuel stoves and furnaces is well known. The presence of carbon monoxide in exhaust gas from automobiles in closed garages or tunnels or even open streets is a frequent cause of illness and sometimes death. Various industrial processes produce carbon monoxide which at times causes workmen to be injured. Natural or manufactured gas burned unter improper circumstances and vented into living rooms may produce similar effects. Natural gas contains much less carbon monoxide than most manufactured gases, but it is more often that we hear of natural gas being used improperly and producing CO in living rooms than is the case with manufactured gas. The reason is supposed to lie in the usual cheapness of natural gas and consequent carelessness in its use.

Natural gas is mostly methane, CH_4, but the incomplete combustion of the carbon part of this radical will produce carbon monoxide just as will any other carbonaceous fuel. Then if the burned products of combustion are not passed away from living quarters by means of a suitable vent, the CO gas is naturally available for respiration.

It is true that the production of carbon monoxide is usually accompanied by other annoying and irritating gases that should serve to warn affected persons by physical discomfiture, but experts are surprised to note how people will tolerate depressive, unhealthy and even gagging atmospheres until they actually are injured. Not infrequently the accidents occur at night when a person goes to bed and leaves an improper space heater burning in his room. Unvented water

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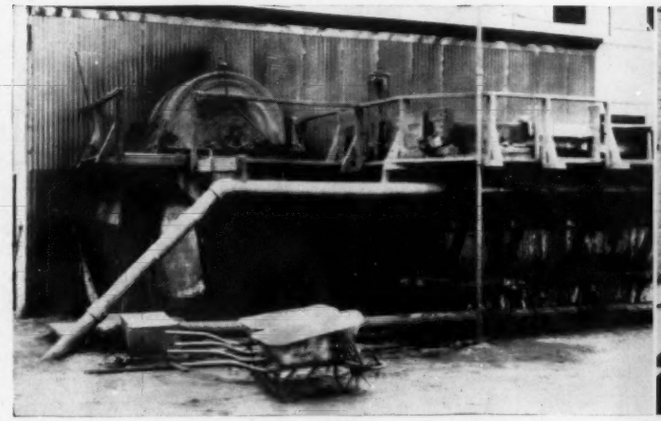
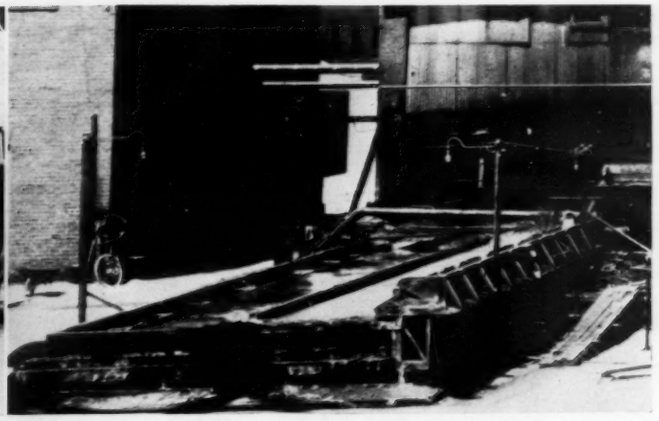


New mechanical thickener and small Oliver filter



Showing the old 24-foot by 60-foot gravity skimmer

Solved: The Problem *of* Handling Lampblack

By W. C. HORNBERGER, *Assistant General Manager*
Central Arizona Light and Power Company
Phoenix, Arizona

Mr. Hornberger's paper on the handling of lampblack, published herewith, was given at the Tucson, Arizona, sectional meeting of the Pacific Coast Gas Association held April 6 and 7.

AN economical and facile method of handling lampblack has long been a subject of discussion and desire among Pacific Coast Gas men. It is a matter of much importance to the average size crude oil gas plant which is not large enough to economically dispose of its lampblack by briquetting. Because of this fact, these plants have no specially designed apparatus to handle this by-product and it is probable that in most gas plants of this character more money is wasted in the act of recovery than is represented by the value of the lampblack so recovered.

On account of its objectionable character, lampblack is a substance which cannot be dumped into a river, creek or sewer. It must be disposed of within the plant itself, or piled up for probable consumption at some future date, and much time, labor and money are wasted in the process.

As a general rule, these recovery plants consist of simple settling basins which allow the water to drain from the lampblack; or gravity skimmers are used which accomplish the same result. Since the water must be drained away slowly, these basins and skimmers are quite large and occupy a large amount of valuable yard space. The lampblack is handled by manual labor and before it finally gets to the boilers or pile, a goodly percentage of it is scattered about the premises, making a decided mess of the whole works.

With the idea of ridding the plant of this condition, the Central Arizona Light & Power Company purchased a block of land a short distance from its combined electric and gas plants, intending to erect thereon a lampblack disposal plant. Settling pits were dug and a sewer from the gas plant was constructed to carry the lampblack and water by gravity from the plant to the pits. In order to be able to clean the sewer readily, manholes were built 150 feet apart for the entire length of the sewer. In due course the lampblack and water were turned into the sewer on its way to the pits. Shortly thereafter, all of the covers floated off the manholes and thick lampblack started to flow over the streets, while comparatively clear water flowed to the pits.

While cleaning up the lampblack in the streets it occurred to us that we had unintentionally built a good separator in our sewer line and shortly thereafter (1919) experiments were begun and a separator built which had as a nucleus the idea of continuously scraping the lampblack from the surface of flowing water and lampblack.

Several of these thickeners were built and after experimenting over two years, the apparatus resolved itself into a tank 10 feet wide, 10 feet long, and eight feet deep. On one end a baffle extends downward to within 18 inches of the bottom. On top of the tank is fitted a series of scrapers on chains, like an endless belt, motor-operated. The lampblack and water enter the side of the tank, the lampblack rises to the surface and is dragged off by the endless belt of scrapers. The water passes out underneath the baffle and flows either to the settling pits in the lower yard or to the sewer. Over 90% of the total lampblack is separated from the water in this way.

The lampblack, which has been scraped forward into a compartment, resembles thick mud and has lost more than 90% of its water content. From this compartment it is fed onto a small Oliver filter, dropped into an elevator and conveyed directly to the bins in front of the boilers.

Because of the thickener, the Oliver filter is very small, one only five feet by four inches in diameter and four feet wide handling with ease the lampblack output of a two million cubic feet per day plant.

Before the Oliver filter was purchased, a number of schemes were tried to dry the lampblack after thickening, such as high drying boxes, handcars with porous bottoms on which a vacuum was placed to suck out the water, etc., but none proved as satisfactory as the Oliver filter.

Among the many advantages of the above thickening process is yard space saved. The new apparatus occupies less than 30% of the area occupied by the old gravity skimmer, leaving yard space usable and valuable for other activities.

A great advantage is that of labor saved. One man now operates the plant, oiling the motors, cleaning up, etc., while before two or three men per shift were required to shovel and wheel the lampblack. Since the laborers necessarily worked in the wet slop all of the time, it was very difficult to get men to

(*Continued on Page 51*)

PACIFIC COAST GAS ASSOCIATION

A Department Conducted by Clifford Johnstone, Executive Secretary

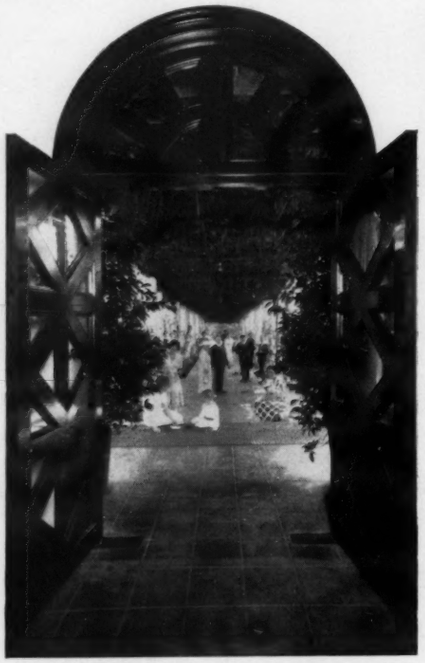
All *Is* Well *with* Companies *in the* Pacific Northwest

PROBABLY in no other section of the continent has the gas company salesman quite such a hard row to hoe as he has in the Pacific Northwest. Salesmen elsewhere may each have their pet competitive problems, but the salesmen in the Northwest have all of them, and in the balmy Northwest climate each little problem has attained to a full and man size stature. The Northwest fuel user can get coal at from $7 to $12 per ton, wood as low as $3.25 per cord, electricity for cooking at from ½c to 3c per Kw. hr. and oil at the same low prices as it is available elsewhere on the Pacific Coast.

Notwithstanding all this, there is no sign of discouragement in the gas company sales rooms visited by the Secretary on a hurried trip following the adjournment of the Northwest Regional Meeting at Portland on May 7. The companies, nearly all of them, have risen to the occasion and developed progressive merchandising policies and enthusiastic salesmanship which is bringing gas fuel to the forefront in spite of adverse competition. It is to be hoped that some day these men can get a day or two ahead of their work and tell the Association how they do it.

Vancouver Gas Use on Increase

In Vancouver the use of gas is expanding rapidly. The company maintains a very attractive appliance store in its main building and another smaller store in the principal shopping district. Two interesting househeating booklets have recently been published—one devoted to hot water boilers and the other to warm air furnaces. In addition, the company advertises extensively in both newspapers and on billboards. The plant and distribution system in New Westminster have recently been acquired, and as soon as physical connections can be made New Westminster will be supplied with gas from the Vancouver plant. In order to make life a bit more difficult for its gas men, the company is now planning a 700,000 H.P. hydro-electric development on the Bridge River. That the company has a high standing is strikingly shown by the recent sale of five million dollars of preferred stock. The issue went over in five and one-half days and was 50% oversubscribed. Not over ten shares were sold to one person and the sale was restricted to British Columbia.



Looking down the pergola from the entrance to the lobby of the Vista del Arroyo Hotel, this year's convention site at Pasadena, Calif.

At Everett, the Puget Sound Gas Company's office is made very attractive by three well planned window displays as well as floor displays of appliances. Mr. Lasher has promised to supply photographs of his "evolution of fuel" windows to *Western Gas* so that we can all enjoy them. In connection with Boys' Week, Mr. Lasher conducted a very successful biscuit baking contest among the Boy Scouts, letting them use modern heat-controlled ovens.

Tacoma Gas and Fuel Co.

It was in Tacoma that the awe inspiring phrase "Electric Competition" originated. Some fortuitous circumstance, possibly the beneficience of the taxpayers, enables the municipality to sell current for next to nothing, and it has taken super-salesmenship of the very best Northwest variety to convince Tacoma people of the superior performance of gas. Mr. Bourus of the Tacoma Gas and Fuel Company is also a believer in effective appliance displays, and he is making the closed-top gas range the most popular cooking device in Tacoma.

A new local office is being built by the North Pacific Public Service Company in Chehalis. It will be occupied about the first of June, and its central location on Market Street should prove a decided advantage. Mr. Schwab is advertising his faith in gas fuel by installing a central gas fired, hot water heating system.

Spokane Gas and Fuel Co.

A. A. Salmon of the Spokane Gas and Fuel Company was in Portland for the meeting and reported that his company is going to manufacture a water heater especially adapted to the flat rate service to which the electric company has accustomed Spokane people. Two designs have been developed, the "Coakley" and the "Griswold," and production is to begin at once. W. C. Coakley is general superintendent of the company.

Portland Gas and Coke Co.

The Portland Gas and Coke Company which already had the most completely equipped gas appliance laboratory on the Pacific Coast, has recently added a CO recorder. This is one of the type in use in the laboratory of the American Gas Association and was developed by engineers of the Bureau of Mines in studying the ventilation problem in the Hudson River vehicular tunnels in New York and the Liberty Tunnels in Pittsburgh. It is the only recorder on the Pacific Coast and one of the few built.

D. J. Young has just returned from a business trip to the East. Mr. Young still maintains his interest in gas refrigeration, and promises to have a gas-fired machine on exhibition at the Convention.

Now *for the* Convention!

WITH the Northwest Regional Meeting out of the way, the officers and committee men of the Association can settle down into the final stretch which will lead to the presentation at Pasadena of the most notable convention program ever offered to the Pacific Coast gas industry. Dates for the thirty-third annual convention are August 23 to 27, inclusive, and headquarters will be at the Vista del Arroyo Hotel.

While the Portland meeting was not well attended by committeemen, those

who were there showed by their enthusiasm that the convention reports this year will be of unusual excellence, and messages coming from absentees were equally satisfactory. The small attendance at Portland was in some ways one of the most excellent features of the meeting as it permitted an intimacy of discussion which is not possible in meetings of larger groups. The program of this meeting was published in the last issue of *Western Gas* and suffice it to say that the papers were listened to very attentively and were most thoroughly discussed. President Schafer presided in his usual happy and witty fashion. C. R. Miller of the Portland Gas and Coke Company carried out all details of the meeting most efficiently.

Rush Papers to Completion

When this appears in print all committee chairmen and authors of papers who desire to have their reports printed in pamphlet form before the convention, should have completed their work and submitted it to their section chairmen. The secretary cannot guarantee to print a paper which reaches him later than June 15.

Under the direction of W. M. Thomson, chairman of the general committee

(*Continued on Page 51*)

Manual *Is* Much *in* Demand

THE Gas Appliance Installation and Service Manual, published by the Pacific Coast Gas Association, has been out only about two months, but in this time 800 copies have been sold, these going to gas companies and appliance manufacturers in 33 states of the Union and in two provinces of Canada.

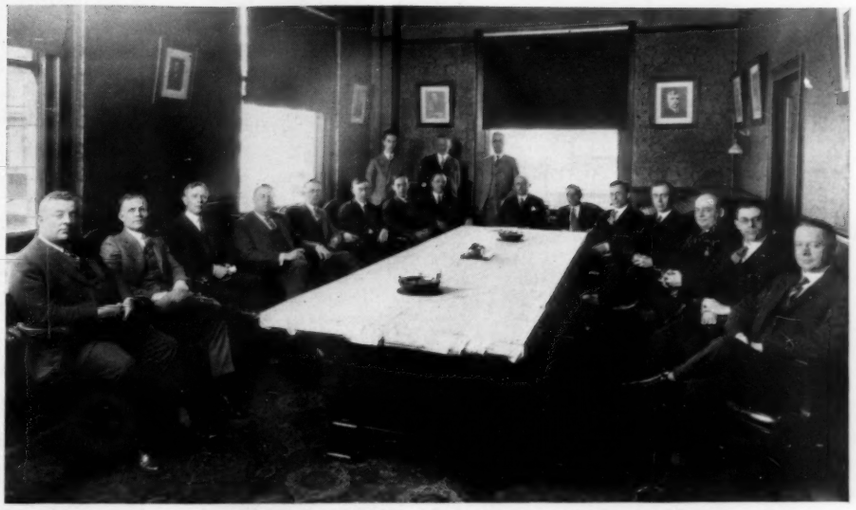
That the book has filled a long felt need is attested to by the many repeat orders received in the Secretary's office after the first copies sent out have been inspected. Many letters like the following have been written to the Association:

> Will it be possible for us to get six more copies of Gas Appliance Installation and Service Manual?
>
> *Lake Shore Gas Company,*
> *Ashtabula, Ohio.*

> We are in receipt of a copy of your Gas Appliance Installation and Service Manual. We would like to secure twenty additional copies of this booklet.
>
> *St. Louis County Gas Company,*
> *Webster Groves, Mo.*

> We are very well pleased with this book and find we could use another copy to very good advantage in our organization.
>
> *Arkansas Utilities Company.*
> *Helena, Arkansas.*

If there are any members of the Association who have not yet secured a copy of this book, they are advised to do so at once as the supply is now very limited.



Members of the Public Relations Council of the Public Service Company of Colorado, caught at a round table session. Sitting, left to right: O. L. Mackell, E. R. Johnson, J. A. Miller, G. B. Buck, Earl Johnson, Charles Sharland, Robert Kelly, T. J. West, Clare N. Stannard, vice-president and general manager; A. A. Klinge, William B. Walters, R. G. Munroe, C. A. Bigler, Earl P. Hodges, Charles H. Elliott. Standing: T. M. Foulk, Frank R. Jamison, R. G. Gentry (chairman).

A United Front *on* Public Relations

By **RUFUS G. GENTRY**
Manager Public Relations, Public Service Company of Colorado

EVERY agency which promotes more pleasing relations with a utility's public is eagerly hailed and adapted to use and innovations in public relations policy are constantly coming to light, being developed in different companies in the public utility field.

Since human nature is a pretty constant factor, varying little with time or location, it may safely be said that many of the problems encountered in public relations will be found common to most utilities. With this common aspect of public relations work in mind western gas men may find considerable interest in an experiment which is now under way as a part of the public relations policy of the Public Service Company of Colorado, Denver, Colo.

Our Company has recently organized a "Public Relations Council", composed of the heads of the departments which have to do most directly with the public and who have under their jurisdiction other employees who come directly in contact with the public, such as salesmen, collectors, meter readers and others, with the view of getting over to them the message of proper treatment and service to be rendered to the customer.

This council will meet from time to time to discuss and devise ways and means whereby proper consideration for the needs of the customer may be given. It is believed that in correlating and coordinating the efforts and work of the departments represented in the Council a great deal of good will be accomplished and that great progress will be made in improving relations with the public.

The thought which materialized into the organization of the Council sprang from this need for correlation of departmental activities and policies in the treatment of customers. It was felt that if the work of each department is executed in such a manner that it dovetails into the work of all other departments, the customer will greatly benefit. I believe we shall accomplish a great deal of good in the line of *serving* our customers efficiently.

The members of this Council and their employees represent about 95% of the "face" of the Company. I mean by this they come in contact with the public so continuously that they are the ones who should know the pulse and the feelings of the public and they should be in a position to explain and direct to the executives a policy which would be satisfactory both to the Company and the customer, thus building for pleasing public relations.

As far as we know, the Public Service Company of Colorado is pioneering in the organization of its Public Relations Council, for it is not to be compared to employee meetings or similar undertakings which have become generally accepted as good practice in the development of a sound public relations attitude within a utility. It is a brand new "wrinkle", but we have considerable confidence in its effectiveness.

EDITORIAL

Natural Gas Gasoline Price-Making

AN editorial in the May issue of a California oil publication raises the question of why the gasoline refiner should be forced to pay more for natural gas gasoline used in blending than he is able to market his finished product for. An absurd condition, says the editorial.

To our way of thinking the fact that for the last year and a half the refiner *has* been paying as much or more for this important constituent than his finished motor fuel brings at tank wagon prices would indicate that there must be some good economic justification for the situation. If the use of natural gas gasoline makes possible a more readily marketable refined product than would be possible without it, then "casinghead" will sell at a premium as long as its supply is under demand.

Refining is nothing but a process of manufacture, and must be governed by the same conditions which operate in other manufacturing enterprises. The syrups which flavor our popular drinks, we judge, cost more per volume than the drinks themselves, and we don't hear the local bottling works asking for a reduction of the extracts price to the scale of the water dilutent.

Another, and a more classic example of the operation of the law of supply and demand is that of our mounting prices for finished gasoline in the summer months. Mounting prices will always bring groans from those who pay, but after all, the utility of the commodity in question and the supply of it which is available will determine the figure for which it sells.

A Vacation Suggestion

VACATION plans are in the process of formation these days, and gas men of the West are given an opportunity which may not greet them again for several years. Southern California, with all of her natural offerings of climate, beaches and scenic mountain retreats, has still another and perhaps a more potent call for the gas man this summer. Pacific Coast Gas Association headquarters assures us that the 33rd annual convention, at Pasadena, August 23-27, will be the most widely attended gathering of its kind that the West has ever seen, and we do not doubt it. Convention plans and vacation plans dovetail to perfection, and while we hold no brief for Southern California playgrounds or hotels, we do say "Come to the 33rd annual convention; stay longer if you can, but come to the convention at any cost!"

Annual conventions of the P. C. G. A. have set a standard of excellence which in itself should make western gas men regard these events as an essential part of their program, but this year there is reason to make an unusual effort to sit in on the sessions. The West has been doing things in gas circles, and there will be new activities for 1927 which every gas utility must undertake if it intends to be in the van of gas progress. What will the West do with gas refrigeration in 1927? How will we tie into the Blue Star Plan? Come to the convention and be informed, and contribute something to the advance of these and other developments of the immediate future.

Our Message Is Getting Over

ONE of the most encouraging signs of what the future holds for gas utilization in industry is the growing recognition our product is receiving at the hands of the trade press. The publications in the natural and manufactured gas field have consistently preached the message of gas in industry. That was to be expected; but the industrial gas engineer and salesman may prick up their ears hopefully when they read such statements as this, from the editorial column of a late issue of *The Blast Furnace and Steel Plant:* "The comparatively recent introduction of gas fuel into the industrial heating field has already done much, (to cut manufacturing costs) enabling the manufacturer either to turn out the same product at a lower cost, or a better product at substantially the same cost as before."

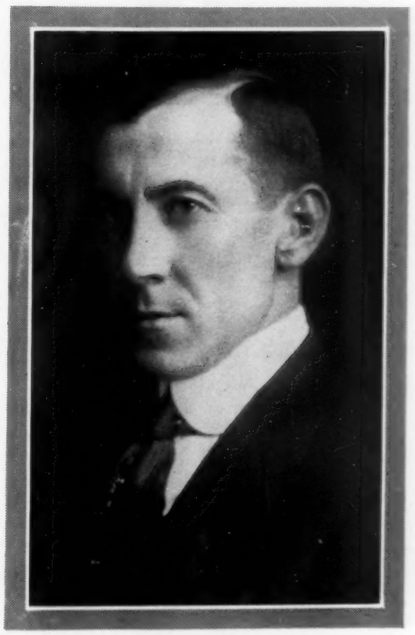
Learning About the West

WITH considerable pleasure we publish E. S. Stone's contribution on the Honolulu Gas Company, Ltd., the progressive gas utility whose operation is under his superintendency in far off Hawaii. Some time ago *Western Gas* took occasion to print another article on a utility which might be called an outpost of gas service—the Panama-Colon Gas Company. It will in our belief conduce to a growth of the spirit of kinship which should be coveted for members of any industry if western gas men may know more about the extent of our field, and it is in this hope that we will from time to time present features taken from the experience of those who work in unusual corners of our great West.

A Policy *for* Appliance Departments

As Evolved in Practice by the Byllesby Engineering and Management Corporation

By J. W. DEVEREAUX



J. W. Devereaux

AN article from the pen of E. L. Hall, general superintendent of the Portland Gas and Coke Company, was published in the April, 1926, issue of *Western Gas* under the caption "Our Appliance Situation—Is It an Asset or a Liability?" Mr. Hall's message, delivered in no uncertain terms, could be briefed as follows:

Progress can only continue in the gas industry as a result of satisfactory gas utilization. To assure this, gas utilities have only one course—they must "get into the appliance game with both feet."

To say that gas utilities should get into the appliance game with both feet is to name the ideal, but is to say nothing of ways and means for placing the utility in the van of the appliance field. *Western Gas* takes this opportunity of publishing a statement of policy worked out by one of the chief gas operators in the country, the Byllesby Engineering and Management Corporation.

A recent issue of Byllesby Management, the monthly executive publication of the Corporation, carried the article on "Development of Modern Appliance Sales Departments," by J. W. Devereaux,, assistant to the vice-president in charge of operation, from which the following extracts are republished.

Only since the spring of 1925 have the Byllesby interests been actively concerned with the marketing of appliances. It is therefore particularly enlightening to read Mr. Devereaux's analysis of their appliance department's policy, particularly in view of the fact that several western utilities are Byllesby units.

THE authorization of the organization of an Appliance Sales Department by the Byllesby Engineering and Management Corporation during the spring of 1925 came somewhat as a surprise to some of our local companies, and also to other syndicates who could not understand just why we had not taken advantage of the opportunity to sell load building appliances. . . . . As various properties are visited, I find that one of the popular questions is, what is Byllesby policy regarding merchandising? Realizing that such a question would undoubtedly be asked, this department started out last spring with a number of approved suggestions for policy which have been followed as closely as possible, and in order that the organization as a whole may become familiar with them, they are given here:

1. That the Appliance Sales Department shall be operated as a separate department of each local company, selling all gas and electric appliances, portable lamps, refrigerators and accessories.

2. That the general management of this department shall come under the supervision of the Byllesby Engineering and Management Corporation, all activity to be under the direction of the general manager of the division, the same as any other department.

3. That the sale of industrial gas apparatus and house heating apparatus shall be made by the industrial gas department. That the sale of industrial electric apparatus, motor installations, etc., shall be carried on by the commercial department.

4. That all offices and stores shall be located on the principal business streets of our towns, wherever possible, and provided the existing lease does not have more than a year to run. Where a lease is in effect which has a longer period to run and the office is poorly located for merchandising, efforts shall be made to dispose of same, even at a small sacrifice, so that the store can be properly located for merchandising.

5. That any removal of present offices shall first take into consideration the needs of the Appliance Sales Department and be so arranged as to give this department an up to date store in the front of the office.

6. That at division or district offices, where there are a number of employes, there should be located on the main floor besides the Appliance Sales Department only those employes who come in contact with the public.

7. That all stores shall be so lighted as to convince the public we have the best lighted store in town. We cannot expect to sell lighting installations if we do not set an example in our own store.

8. That each and every store shall have a standard electric sign which is second to none. The best is none too good for a gas and electric company.

9. That every store shall have good windows for display and demonstration, which shall be strictly a part of the Appliance Sales Department.

10. That Byllesby standards in store fixtures, lighting, etc., shall be used in all stores, the installation to be made under the direction of, or approved by, the Byllesby Appliance Sales Department.

11. That the advertising department of the Byllesby Engineering and Management Corporation, in cooperation with the Appliance Sales Department, shall supervise advertising material.

12. That house wiring and contracting shall not be carried on by this department, except where it becomes necessary to protect our interests through proper installations.

13. That house lighting fixtures, except kitchen lighting units, shall not be carried or sold unless there are no electrical dealers in the town.

14. That this department shall give service on all appliances at nominal cost to customers.

15. That this department shall supervise the installation of all appliances requiring such service and shall demonstrate all appliances to the satis-

(*Continued on Page 42*)

ANNOU

The ROPER-BABCOCK
High Efficiency Gas Fired
WARM AIR FURNACE!

A new field for Roper Service

Ever building toward greater service to the Gas Industry, Roper now announces its manufacture of the Roper-Babcock High Efficiency Gas Fired Warm Air Furnace.

Back of this wonderful product Roper now places the same great resources and facilities that have built up the important position long held by Roper Gas Ranges.

Long ago the Gas Industry realized the great possibilities in the home heating field as soon as a safe, efficient, economical gas fired warm air furnace could be developed and merchandised in a big way. The Roper-Babcock is *that* furnace—Roper is ready to start *that* merchandising.

The Roper-Babcock was originally developed and designed in 1912, through the combined scientific skill and efforts of twenty engineers of leading gas companies in the East and Middle West. The furnace has been manufactured since 1913, has been sold generally to the Gas Industry since that time and is now being used in thousands of homes—it has been rigidly tested time after time—it is a proved success.

There are great opportunities ahead for merchandising the Roper-Babcock. The wide use of gas for home heating is coming—this furnace and Roper merchandising plans will speed the day—

George D. Roper Corporation · *Rockford, Illinois*
***Pacific Coast Branch:* 135 Bluxome Street, San Francisco, Cal.**

UNCING

ROPER

HIGH EFFICIENCY GAS FIRED

TRADE MARK
BABCOCK

WARM AIR FURNACE

Burner Adjustments *and* Ailments

By G. R. KENDALL
Northwest Gas & Electric Equipment Company

As one of the lectures in the Gas Appliance Association's course of study, recently presented under the auspices of the Extension Division of the University of California, Mr. Kendall delivered the paper published herewith. It will be found an extremely well organized statement of the rudiments of burner design and operation.

GAS burners are of two general types: *luminous flames* and the more generally known and widely used *bunsen* or *blue flame*. Each kind of flame has its own field of usefulness and if combustion is complete and the flame properly applied, each will deliver the same amount of heat from a given quantity of gas.

Gas requires for complete combustion, air in the proportion of about one cubic foot for each 110 B.t.u. of gross heat value. If gas is forced directly into the atmosphere through a small orifice, the air for combustion is drawn into the jet and the gas burns with a long luminous or yellow flame. As the holes in such burners must be small, appliances using them cannot burn gas in large quantities. If this flame is permitted to touch a cold solid surface incomplete combustion will result and soot will be formed and carbon monoxide liberated.

The *blue flame* or *bunsen* type of burner is provided with an external mixer in which a portion of air, about one-half cu. ft. for 110 B.t.u.'s of gas, is mixed with the gas previous to ignition. This is called *primary air*.

The flame issuing from the port of this burner has two distinct parts. A pale blue inner cone and a darker one surrounding it. The heat of the flame issuing from the burner port draws currents of air past the flame and into it in a sufficient quantity to cause complete combustion. This is known as *secondary air*.

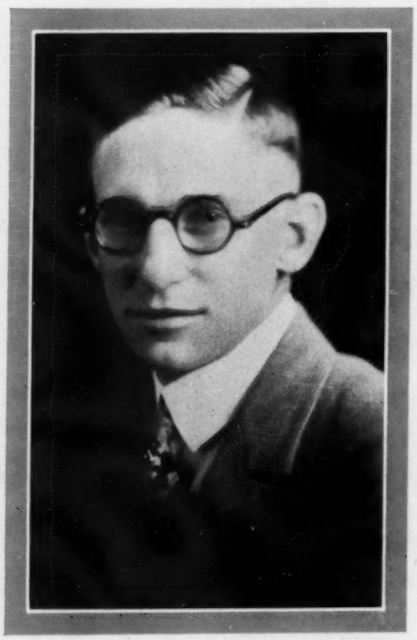
The flame should sit squarely on the port and should not have a yellow tip. A yellow tip indicates insufficient primary air and is corrected by opening the adjustable air shutter.

With your permission I will at this point name and describe briefly the various parts comprising the makeup of a *bunsen* type burner used on the ordinary gas range.

Gas Cock: The gas cock or valve is that part of an appliance designed to permit by the action of opening or closing, control over the pressure of gas to the burner.

Gas Orifice: The gas orifice is that portion of the gas cock or valve designed to control the flow of the gas being delivered to the mixing chamber of the burner and is usually of the adjustable type although in some cases it is fixed and its size is determined by the kind and quality of gas being used.

Air Mixer: The air mixer is that portion of the burner in which the primary air and the gas are admitted to be properly mixed for combustion.



G. R. Kendall

Air Shutter: The air shutter is an adjustable device designed to control and regulate the flow of primary air to the mixer, or mixing chamber of the burner.

Burner Ports: The burner ports are the openings in the burner that support the flames.

Mixing Tube: The mixing tube is the portion of the burner which connects the air mixer and the main body, and through which the mixed gas and primary air pass to the burner ports.

Burner Manifold: The burner manifold is a pipe generally built into or made a part of the appliance and to which the valves supplying the burner are attached. It provides the immediate source of gas supply for the burner and is connected to the house-piping.

Combustion: Combustion or burning is a chemical change of matter accompanied by heat or light or both. Combustion is impossible without the presence of oxygen. For complete or perfect combustion a certain volume of air is therefore required, enough to provide the proper amount of oxygen. Complete or perfect combustion takes from the air its oxygen and produces carbon dioxide, water vapor or steam and nitrogen, which is an element always present in air. Carbon dioxide is always present in the atmosphere and is not harmful unless present in quantities far in excess of that ordinarily found under normal conditions. Imperfect combustion produces a different chemical action and among the products formed there is quite likely to be some carbon monoxide. Carbon monoxide is odorless and colorless and is extremely poisonous even in very small quantities, and conditions which may lead to its production are to be avoided.

The Ideal Burner

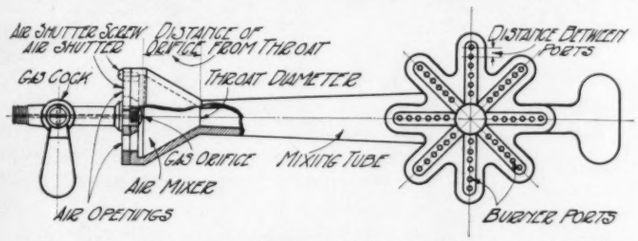
The ideal appliance or burner would be one that would properly burn all the different manufactured and natural gases under all the varying pressures, B.t.u.'s, specific gravities, and in any quantity without loading the atmosphere with products of combustion that pollute it and make it unfit to breathe, but that burner has not yet been developed and we are forced to use such as we have.

Burners do not operate under an ideal condition, as just outlined, and the reasons are many. On one hand there are the constants to contend with, such as the *port area,* the *reservoir capacity,* the *mixing area,* the *venturi tube dimensions* and the distance from the utensil, while on the other hand there are the variables to be considered, such as *specific gravity,* which influences velocity flow and air entrainment; *composition of gas,* which influences volume of air required to combust; B.t.u. and *composition* influencing efficiency and volume of atmospheric air required for combustion.

Common Ailments

The following are a few of the common burner ailments and for the most part the remedy in each case is obvious:

If when the machined ports are perfectly clean and gas delivery is direct from the stop cock, a popping back takes place or complete combustion cannot be secured, it would indicate that the burner is either under ported or over ported for the amount of gas that the burner will, should or must deliver.



The Atmospheric Star Burner of the Bunsen type which is pictured above was illustrated in a lantern slide for the benefit of the gas appliance students who listened to Mr. Kendall's lecture, published herewith. A part of the discussion dealt with the structure of gas burners.

If the burner ports have been reduced either from oxidation or from matter filling them from cooking operations, inefficiency and incomplete combustion will result.

If gas delivery is not direct, that is, delivered truly through the venturi neck of the burner it will cause a reduction of primary air entrainment, demanding more secondary air and greater space, distance or time for combustion; therefore incomplete combustion will result.

If the air regulator is improperly adjusted, not permitting the entrainment of a sufficient quantity of primary air, the distance, space or time for combustion being constant or rather the demand for secondary air being increased, incomplete combustion must result.

It is obvious from these few citations that the greatest ailment we have to contend with in gas burners is improper combustion which results in the liberation of unburnt contents of the fuel, generally referred to as carbon monoxide; therefore it is proper at this time to explain at least one method of adjusting burners generally conceded to be good practice.

Method of Adjustment

Assuming the burner is structurally correct so far as number of ports, port size, etc. are concerned, to adjust it you would proceed as follows:

Be sure the burner sets firmly in place and the gas is being fed straight into it.

Close the air shutter.

Open the valve wide.

Light the gas.

Slightly open air shutter.

Adjust the flow of gas through the gas orifice until the flame is at the desired height. (On an open top range it should just touch the cooking utensil and on a closed top range it should be a little below the cooking surface).

Open air shutter gradually until sharp blue flame is secured. One with a distinct inner cone is best.

Fasten the air shutter securely with the set screw or other means provided.

Adjust oven burners in the same manner but as near as possible to rated capacity.

Burners of different types are usually rated as to capacity by the manufacturer and where extremely fine adjustments are required it is well to adhere to these ratings. This can usually be done by checking and timing the flow of gas through the meter, as most gas meters are provided with a small dial hand showing the amount of gas being passed through it in a given length of time.

Calculations can be made as follows: A burner rated at 10,200 B. t. u. per hour is being adjusted on gas with a caloric value of 850. Divide the rated capacity by the caloric value and you will find the burner should consume 12 cu. ft. of gas per hour. Go to the meter and time the dial. If you find the meter is passing gas at the rate of 12 cu. ft. per hour your adjustment so far as the flow of gas is concerned is correct; if you find it is passing considerably more than this, a readjustment must be made by cutting down the flow at the gas orifice. If the manufacturer rates his burner in cubic feet he will or should always state the caloric value of the gas under which the rating was established and with this data you can easily calculate what the rating should be under the gas condition with which you are working.

Poor Pressure is a common cause of complaint. It does not require a Sherlock Holmes to discover this trouble, but sometimes it is a real job to find the cause. Unless the condition is purely local and can be remedied easily, such complaints should always be referred promptly to the gas company for attention.

Burner Stoppage is often the cause of poor pressure and as a rule is self-evident. If it is an aggravated case the burner ports should be reamed out and the housewife directed to boil the burners in a solution of lye water or caustic soda until they are thoroughly cleaned. The housewife should be advised to do this often in order that the burners may be kept clean and future trouble of a like nature avoided. Oven burners are not subject to this trouble to the same degree as top burners, but may get in this condition due to foreign substances being drawn through the mixing chamber and carbonizing around the burner ports. If reaming out the burner ports and boiling the burners that get in this condition does not remedy the evil there is only one other thing to do. Buy new burners.

Whistling or Noisy Burners are usually the result of too much primary air. It may be caused, however, by some obstruction in the gas orifice which can be remedied by reaming.

Burner Backfiring is caused usually by too lean a mixture, may be caused by poor pressure, or by burners being over ported.

Floating Flames may be the result of poor ventilation, poor pressure or not sufficient supply of primary or secondary air.

Summing up all these points you will find that poor combustion may be caused by many things classified under the heading of improper adjustments, improper installation of the appliances, faulty construction of the burners, and some times gas conditions not anticipated by the manufacturer or the party selling the appliance.

Utilities *to* Have Part *in* Purchasing Agent Sessions

GAS men of the west will be represented on the program of the National Association of Purchasing Agents when that body gathers in annual convention in Los Angeles, June 9 to 12. And so will the public utility industry in general, for a special section of the convention is to be devoted to utility topics, two sessions being scheduled for this section.

In the afternoon of the opening day of the convention, June 9, at 2:30 the public utility section will assemble to listen to four addresses. N. L. Morse, purchasing agent of the Southern California Gas Company, will speak on "The Permanent Requisition Form—Its Advantages and Disadvantages." Another Los Angeles man, T. B. Parks, purchasing agent of the Los Angeles Gas and Electric Corporation, will respond to the subject "Empty Containers and Their Handling." "Possibilities of Organized Effort," and "Testing of Materials," are other scheduled topics. The meeting will be under the chairmanship of Lewis A. Jones.

At a dinner session beginning 6:30 of the same day, June 9, the public utility men will hear discussions of "Executive Cooperation in Purchasing," "Standardization, Supply Treatment, etc. of Poles," and "Reciprocal Purchasing," the last named being given by Norman R. McKee, of the Southern Counties Gas Company, Los Angeles.

Gas men will find additional interest in two addresses appearing on the fuel section's program. J. B. Arthur, manager of fuel oil and asphalt sales for the Union Oil Company of California, will speak on "Development of Fuel Markets." A discussion of "General Fuel Oil Production" by W. E. Dunlap, assistant manager of the United Oil Company, will follow.

HATFIELD OIL COMPANY HAS GOOD GASSER IN NO. 3 WELL.

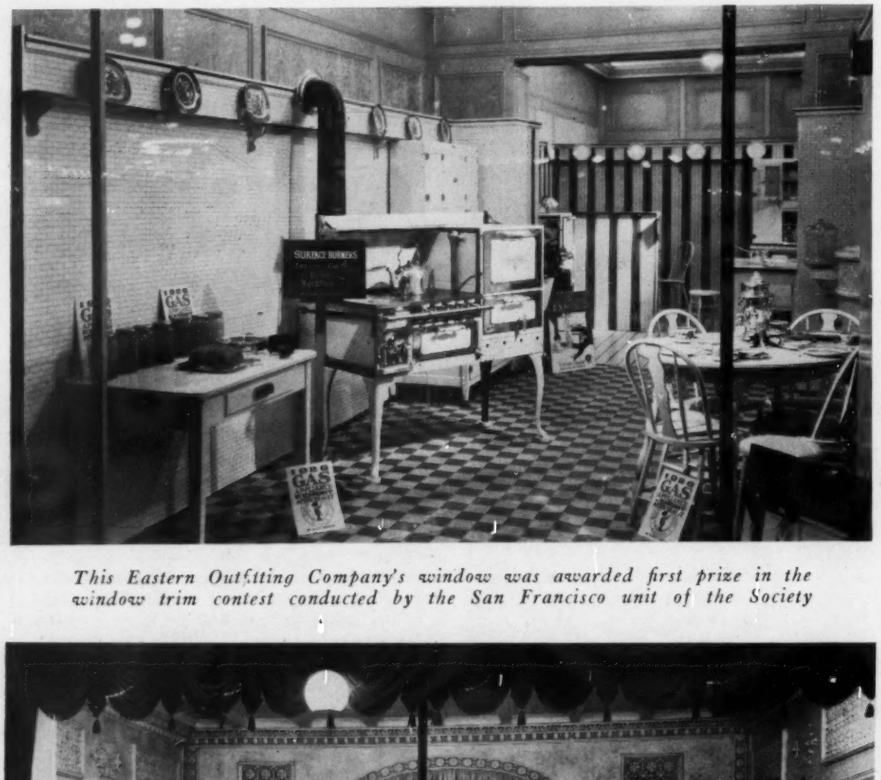
After threatening to turn into a water well the Hatfield No. 3 well near Rawlins, Wyo., has settled down into what looks like a good gasser, delivering between six and eight million cu. ft. daily.

Campaign Aims *at* Education -- Scores Bulls-Eye

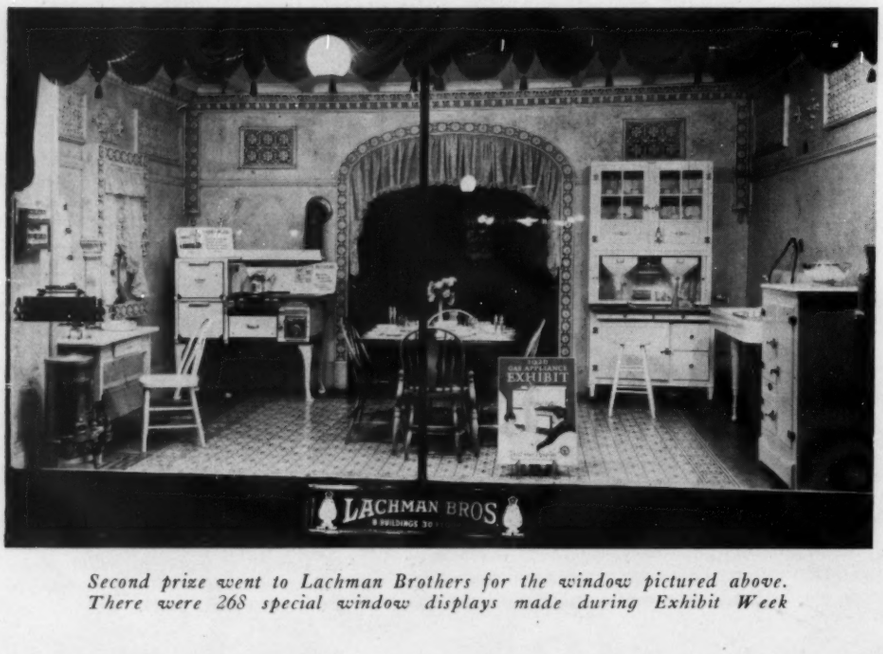
By H. ELLIOTT TAYLOR

FINAL report on the Gas Appliance Society of California's annual spring campaign, held this year from April 11 to 17, was released about the middle of May and disclosed a number of facts which seem to point to the most successful Exhibit Week the organization has yet put on.

Largely because of the absence of price appeal this year the campaign did a constructive educational work in the cause of better gas appliances which will long be felt in the Society's territory. Every conceivable weapon of publicity was leveled at the public, 485 newspaper pages of advertising and publicity, worth more than $120,000, being an outstanding result. Radio talks were broadcasted each day of the Week, from San Francisco, an ad writing contest was participated in by 10,000 girls—future home makers, 268 special window trims carried the modern gas message to shoppers throughout all of Northern California. Over 2,000 advertising mats were sent out free of charge to dealers and newspapers by the Society, and an advertising booklet to introduce the ad writing contest had a distribution of 10,000. Several collective exhibits and demonstrations were held. The largest of these was in Oakland, estimate being made that 100,000 people inspected this exhibit. In connection with the Oakland exhibition a cooking school was conducted in cooperation with high school girls. Over 100 special store demonstrations were held in dealers' stores, and San Jose, Fresno, Sacramento and Oakland dealers held baking contests, 300 cakes being turned in in Sacramento alone. In Fresno 3,000 school girls entered a baking contest, 270 of them competing in the finals at a public collective exhibit.



This Eastern Outfitting Company's window was awarded first prize in the window trim contest conducted by the San Francisco unit of the Society



Second prize went to Lachman Brothers for the window pictured above. There were 268 special window displays made during Exhibit Week

Another large cooperative exhibit display, and demonstration was conducted at Marysville, reaching all of the citizens of that community and also of Yuba, Oroville and Colusa. Grass Valley also held a widely attended exhibit.

One of the most effective bits of gas appliance publicity ever compiled was the special 16 page newspaper supplement prepared and distributed to 4,000 newspapers and dealers as an aid to Exhibit Week publicity.

Accompanying this article we print pictures of the window contest winners. A very high tone of window display characterized the special trims during the Week. Particularly to be noted was a happy absence of price appeal. In the window of the Eastern Outfitting Company, which was awarded first prize in the San Francisco Unit's contest, we see a stove in a genuine working environment. The housewife could herself step into the picture and go about her usual kitchen tasks, without surprising us—so natural is the setting. The window of Lachman Brothers, which won second prize in the same territory, is deserving of an equally warm tribute. A welcome note in all of the windows was the consistent use of highly modern equipment.

In the Campaign this year the sales feature was purposely subordinated, the directors of the Society feeling that this element was no longer essential to the success of the drive. Dealers generally are appreciating the need for education of the public to better merchandise, and the Exhibit Week this year was designed to put this message over in the field of gas appliances. Follow-ups to the Campaign are planned by individual members of the Society, and the week of "open house" to the public developed an abundance of leads on which to work. Those who sponsored the drive and carried it to its successful comple-

tion characterized it as the introduction to an entire year of intensive selling.

A general, constructive two-months cooperative advertising, publicity and sales follow-up is planned by the Society for the months of September and October. Gas ranges, house heating and water heating equipment will all be featured in this drive, and sales stimulus throughout all the Society territory should result.

Geo. D. Roper Co. Takes Over Babcock Furnace

OF FIRST importance in the development of the gas furnace manufacturing industry is the announcement made in May that the Geo. D. Roper Corporation of Rockford, Ill., has purchased the C. B. Babcock Gas Fired Warm Air Furnace, hitherto manufactured in San Francisco, Calif.

Watson E. Derwent, vice president of the Roper company, announces further that manufacture of the furnace will now be at Rockford, equipment being moved from San Francisco to the new point as rapidly as possible.

The Babcock furnace, well known under its own name, will be rechristened the Roper Gas Fired Warm Air Furnace, and the full force of the Roper national advertising and national sales organization will be directed toward merchandising the equipment on a national scale.

A belief in the trend toward househeating by gas is clearly manifested in this development in the Roper organization. While this is the first move the company has made to get into the furnace manufacturing field, it has picked a pioneer line, the Babcock furnace having been established 15 years ago in Cleveland, being moved to the Coast with its purchase by C. B. Babcock.

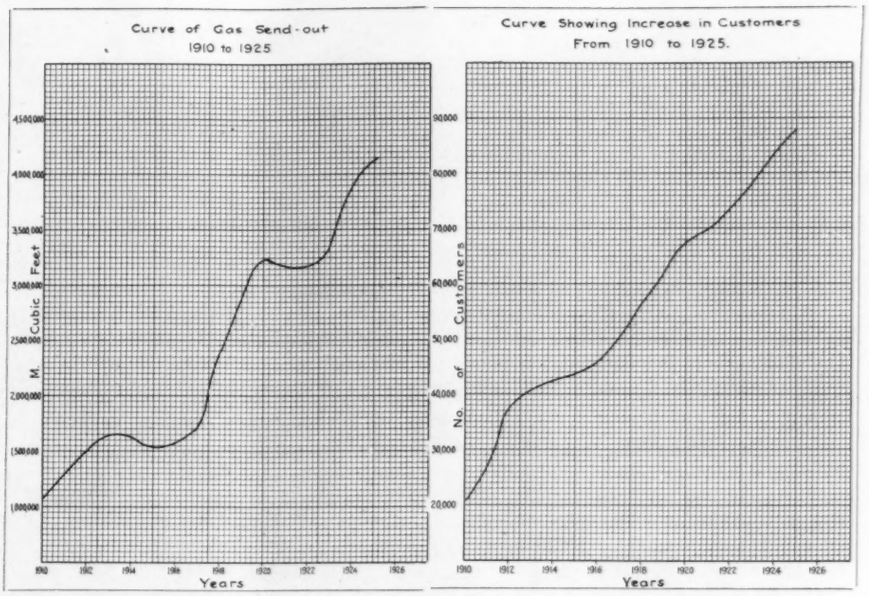
Mr. Derwent states further that his company views its new line of manufacture as a logical sister line to its gas ranges, since both find their primary usefulness in the home.

GEOLOGICAL SURVEY HEADS IN CONFERENCE IN DENVER, COLO.

A series of conferences were held in Denver during May by division heads of the United States Geological Survey under the direction of Herman Stabler, Washington, D. C., chief of the conservation division. Following the conferences Mr. Stabler will study conditions on the Pacific Coast, after which he is scheduled to make an inspection of oil and gas development in the Rocky Mountains region.

PHILLIPS PETROLEUM HAS PATENT ON NEW TYPE STABILIER

A patent covering a new type of natural gasoline stabilizer has been granted to the Phillips Petroleum Co., Bartlesville, Okla. Unlike the stabilizer of the Carbide & Carbon Chemicals Corp., the Youker process rectifies the natural gasoline by counter-current contact with incoming raw gas. In addition to being a process for recovering a gasoline of desired volatility from natural gas, it is the belief of the inventor that the process may be adapted to the recovery of helium gas.



Gas Use Gains *in* Portland Region

PORTLAND and adjacent territory continues to find gas the ideal fuel, as witnessed by these two charts. The gas sendout in that district increased some seven per cent in 1925 over 1924, according to report of the Portland Gas and Coke Company, the sendout figure being 3,572,181,000 cubic feet for 1925. The year witnessed also a five per cent gain in customers, the new users numbering 4,072 and bringing the Company's total consumers to 87,879 at the end of 1925. Industrial consumers showed the greatest increase, the gain in this class amounting to 14½ per cent.

In keeping with Portland's large building program the company report another busy year of construction in 1926, confined principally to new services and commercial main extensions. An average of 500 services and 25,000 ft. of main are being installed each month. An exceptionally large amount of high pressure mains are being laid this year, due to real estate developments in the suburban communities.

Gas Line Looms *for* Colorado Cities

DENVER, Colorado Springs, Pueblo and other towns of Colorado may be served with natural gas from the Amarillo fields of the Panhandle district in northwestern Texas, if negotiations understood to be under way between a group headed by Minal E. Young of Casper, Wyo., who until recently was vice president and general manager of the New York Oil Company, and the Public Service Company of Colorado, Denver, Colo., are carried through.

A 300-mile pipeline would be called for in the contemplated project, involving some $10,000,000 to $12,000,000 in cost. Mr. Young and his associates, it is understood, have made a long time contract with the Southwestern Development Company, a subsidiary of the Prairie Oil & Gas Company, which would insure an adequate gas supply for the needs of the communities to which service would be extended. The field to be tapped in the Amarillo district is reported to have a gas capacity of 2,000,000,000 cu. ft. a day, the gas selling at seven cents a thousand at the fields.

Mr. Young is understood to be conferring with the Henry L. Doherty interests, which own and operate the Cities Service Properties. The Denver franchise of the Public Service Company of Colorado expires next month, and in all probability this fact precludes winding up any deal for a gas supply for Denver until the franchise problem is settled.

Several Wyoming men are interested in the proposed pipe line enterprise in addition to Mr. Young, among them Maxwell W. Winter and E. W. Power of Casper, and Charles S. Hill, Cheyenne.

Colorado offers an attractive field for natural gas, as the extensive zinc mining interests present a good market. The steel plant of the Colorado Fuel and Iron Company at Pueblo also would offer possibilities for a large consumer.

Headquarters of the natural gas company are already established in Denver, according to report, and press dispatches also state that arrangements for rights-of-way for the line are already being made.

In New York financial circles a report is current that a $10,000,000 loan is being negotiated to finance organization of a gas company in the Mid-Continent territory. That the rumored loan may be in reference to the Denver-Panhandle developments is credited by many.

TO USE BARRELS AS UNIT OF MEASUREMENT SAYS BUREAU

The barrel will replace the gallon as a unit of measurement for refined petroleum products in Bureau of Mines usage, the change to become effective within a period of about three months. A recent canvass of sentiment in the industry showed a great majority favoring the change to the barrel.

The Blue Star Plan---*A* National Sales Program

outlined above, some tangible and concrete dress must be given them; some handle by which they may be grasped. The value of a name or slogan in fixing ideas in the mind of the public is readily appreciated by anyone who has had selling experience.

To take advantage of this force in our gas and appliance campaign, a symbol or trade mark has been established—the *Blue Star* — which can be applied equally to the installation and to the particular appliances to mark them as meeting the requirements of the campaign. A small blue star label on the appliance marks it as of high quality—meeting A. G. A. requirements; a large poster carrying a blue star surrounded by a circle with suitable wording marks the house adequately equipped for comfort and convenience in gas service.

Practical Operation of Plan

In each town in which this program is operated, the local gas company (or trade group) sets up for its territory certain minimum requirements which constitute "adequate equipment" for Blue Star homes—i. e. which shall entitle a house to the award of a Blue Star poster. These requirements cover size, amount and installation of piping, number and size of flues, number of outlets, and the number and location of appliances. These requirements are based upon a survey of actual conditions existing in the city and the minimum is set *higher* than the "average" installation—as the purpose is to increase the average equipment.

The second step is for the local sponsors to select the particular appliances which shall be marked with the Blue Star label (on the basis of quality and performance) and with which a Blue Star home must be equipped. As the A. G. A. laboratory issues its lists of tested and approved appliances the seal of approval of the laboratory (a blue star with suitable wording) will replace the temporary label now being used and the laboratory approval will eventually be the basis of choice of appliances for the Blue Star Home. However, until the laboratory has completed sufficient tests to give a representative national list of approved appliances, the local gas company may designate the "Blue Star" appliances for its own territory, after submitting the list to A. G. A. Headquarters.

Formation of Trade Group

Although this campaign may be operated entirely by the gas company alone, provision is also made for drawing in plumbers, heating contractors

(Continued from Page 15)

and dealers, (and, if desired, realtors and architects) for this campaign by forming a cooperative operating group to share expenses and activities. This phase of the compaign is valuable because it serves to raise the standard of installations and of appliances sold through these channels — which is one of the points of difficulty in many cities. Each of the cooperating group is permitted to use the Blue Star as long as he maintains the requirements set up.

Demonstration Houses

Whenever possible, the campaign includes the arranging and exhibition of at least one demonstration Blue Star home while the plan is in progress. A local builder is approached and permission secured to furnish and equip a new house (which he is building) with the Blue Star equipment. This is then opened to the public and featured as a typical Blue Star Home.

In 28 larger cities of the United States this demonstration home plan is being carried on in cooperation with the Home Owners' Service Institute which has agreed to erect model demonstration homes equipped with Blue Star standard equipment, so that the local gas company need only loan the appliances and assist in the local promotion.

Methods of Promotion

The promotional work of a local Blue Star campaign need not call for the expenditure of much actual money —but it does require careful planning and execution. Necessarily a certain amount of local newspaper advertising should be done, but by cooperating with the newspapers a special section of editorial and advertising material may be prepared at small cost—by securing the advertising of local merchants helping to furnish the demonstration homes, of plumbers, contractors, dealers, etc.

The American Gas Association has prepared a promotional booklet to distribute among plumbers and dealers to solicit their support and cooperation which will be furnished to the gas companies. Posters for the Blue Star Homes, labels for the appliances, and a comprehensive booklet for distribution to consumers (either with gas bills, at the demonstration homes, or otherwise) have been prepared for use by the gas company and may be obtained in quantities at a small cost. Publicity material of other kinds is also available.

As individual city conditions largely govern the particular form of exploitation of the Blue Star idea, details cannot be given in a general article of this kind.

The Blue Star Plan is not a vague idea. It is a practical plan based on sound merchandising experience in the gas industry and other lines of business. It is simple, flexible and effective in building gas and appliance sales.

Before launching the campaign, its sponsors tried it out in three eastern cities and found that the results justified the effort and expense in raising the conception of the standard of gas appliances and domestic installations in these towns—and in dollars and cents sales.

In the short period in which this Blue Star Plan has been before the industry eight other cities have taken it up, in addition to the 28 larger cities operated in conjunction with the Home Owners' Service Institute. It is the aim, and the earnest hope, of the A. G. A. Commercial Section that the Blue Star Plan will spread so largely through the country as to have a cumulative, additive effect which will have all the force and value of a national sales campaign to increase the sale of gas and appliances, and to raise the standard of gas convenience in the homes of America.

ANOTHER UTAH PUBLIC RELATIONS GESTURE, AND A GOOD ONE

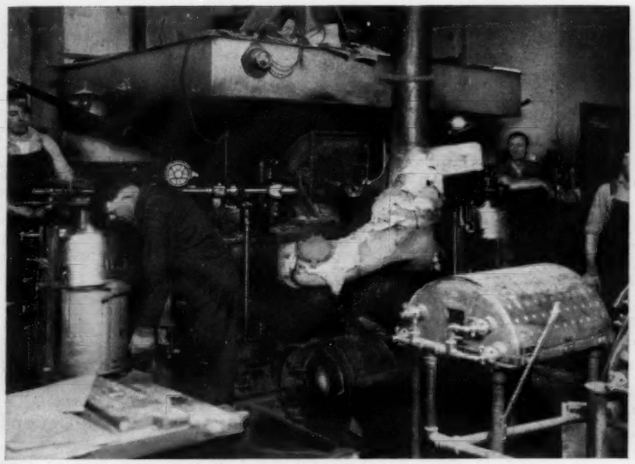
How could a reasonable public possible take offense at a gas holder, if the site of the holder is turned into a playground for the youngsters of the community? The answer is, it couldn't, says the Utah Gas and Coke Company, and so on Mothers' Day that progressive utility of Salt Lake City, Utah, dedicated a recreation park which will accommodate from 200 to 300 children, and which is equipped with rings, bars, swings, and every other needed item of playground apparatus, the park being laid out on the site of a district holder which furnishes gas for the southeastern part of the city.

COMPANY INCORPORATES TO MINE CALIFORNIA COALS

Articles of incorporation have been filed for a company to be known as the Mt. Shasta Coal Company, capitalized at $10,000,000, with headquarters in San Francisco. The company, which will undertake extensive coal mining operations in Shasta County, Calif., is a logical development from the successful experimentation with Shasta county coals by the Pacific Gas and Electric Company. This experimentation has culminated in the establishment of a gas plant at Marysville which will operate on the Shasta coal.

According to the California state mining bureau there are 50,000 acres containing coal deposits in Shasta County, located principally on Oak Run and Clover Creek .

On the board of directors of the corporation appear the names of Charles H. Dickey, R. Ferbeck and John L. McNab of San Francisco; H. C. Morris of Oakland, S. E. Biddle, Harry H. Fair and W. S. Yard of Piedmont; A. P. Cross of Los Angeles; John A. McCandless of Honolulu; and A. F. Hockenbeamer of Berkeley.



Melting stereotype by gas at the Oakland Tribune.

Standard Brass Casting Co. uses gas-fired core ovens.

Harnessing Gas *to the* Demands *of* Industry

equipped with a clock arrangement so that the gas is automatically shut off after having been on for the desired length of time as determined by the core room foreman when lighting the oven. Incidentally, each of these ovens has a capacity of from six to eight tons of cores per night and the gas used averages a fraction under one cubic foot per pound of cores.

The heat treatment of metals covers another large classification of gas use. The temperatures used vary from 200 deg. F. to as high as 2400 deg. F., and the operation may be forging, tempering, annealing or hardening. As the use varies, so does the size of the furnace: Perhaps the smallest furnaces are those having openings two by four inches and with a depth of eight inches. The largest furnace on the company's lines both from a standpoint of size and hourly demand is an annealing furnace in a railroad shop. The particular furnace is ten feet, one and one-half inches wide, fourteen feet, seven and one-half inches long

(*Continued from Page 19*)

and three feet high. It operates at an extreme temperature of 1900 deg. F. and has a maximum hourly gas consumption of 10,560 cubic feet. Steel plates one-half inch in thickness and weighing over 1800 pounds are heated to 1800 deg. F. in twelve minutes. The most recent furnace for the heat treatment of metal is one installed at the Mare Island navy yard. The furnace is a steel tank eight feet long, twelve inches wide and four feet deep, filled with a salt compound and heated with eight high-pressure gas burners thermostatically controlled. The salt bath is operated at from 650 deg. F. to 950 deg. F. in treating duraluminum, that new and remarkable metal having the weight of aluminum and the strength of steel.

In the melting of metals gas has a very wide field. Practically all newspapers melt their type metal in gas-fired furnaces. Plants making storage batteries also use it for melting the metal used in making the battery plates. One of a number of brass founderies has a direct gas-fired furnace with a capacity of twenty-four hundred pounds of brass at one charge. From this the furnaces range down to less than 100 pounds capacity.

Fundamentally, gas is used because by its use it is possible to obtain a better product, or a larger volume, or labor may be saved, or for any one of a great number of reasons, all of which finally resolve themselves into a lower unit cost to the finished product. Referring again to the tabulation of various fuels given in the above, it is obvious that displacing but a small portion of other fuels would increase the industrial use of gas tremendously. This displacement of liquid or solid fuels is progressing, as cost analyses show that the point always to be considered is not so much the cost of the fuel but what it costs to use it.

CHANGES IN NEW YORK OIL COMPANY EXECUTIVE PERSONNEL

The annual stockholders' meeting of the New York Oil Company, at Caspar, Wyo., May 10, resulted in the reelection of all directors of the organization, with the exception of John P. Herrick, Olean, N. Y., whose request for release was granted. R. S. Hutchinson of Oshkosh, Wis. will serve in his stead. Other directors of the company are: Emil H. Steiger, Oshkosh; Whitney G. Case, Buffalo; Minal E. Young, Casper; Harriet C. Curtis, Casper; Harry P. Hynds, Cheyenne; A. G. Setter, Cattaraugus, N. Y.; Heman D. Curtis, Thermopolis, and E. J. Sullivan, Casper.

One important development of the meeting was the resignation of Minal E. Young as vice president, general manager, and treasurer, and Maxwell W. Winter as secretary. Emil H. Steiger was reelected to the presidency and made general manager, Mrs. Harriet C. Curtis was elected secretary-treasurer, and Miss I. S. Newell assistant. C. O. Rockwell was elected assistant manager. Whitney G. Case of Buffalo, N. Y., and Harry P. Hynds of Cheyenne are vice presidents of the company.

Mr. Young, it is understood, will devote his time to the active promotion of the proposed pipe line project from the Amarillo field in the Texas Panhandle district to Denver, Colo., Mr. Winter being associated with Mr. Young in the new work.

RICHFIELD INSTALLS CLARKS' IN PLANT AT FELLOWS

The Richfield Oil Company has just completed the installation of two Clark two-cycle, direct driven compressors in its absorption plant at Fellows, Calif.

TO LAY NATURAL GAS LINES NEAR MONTESANO, WASH.

The Washoma Oil Company was granted a franchise early in May to lay natural gas lines adjacent to its drilling sites a short distance west of Montesano, Wash.

SO. CALIF. GAS CO. TEAM WINS IN BOWLING TOURNEY

The bowling team of the Southern California Gas Company, which entered the Pacific Coast Bowling Congress Tournament held in San Diego on Saturday, May first, took first place on the opening night of the tournament in the 810 class and third place in the open five-man event.

NATURAL GAS GASOLINE TOTAL HIGH FOR U. S. PRODUCTION

Natural gas gasoline production of March, 1926, rose to a total of 113,147,000 gallons, a daily average of 3,650,000, a new high record accounted for by increases in Mid-Continent and California production.

DUNCAN STEWART NOW PLANT CHEMIST AT SAN JOSE

Duncan Stewart, who has been cadet engineer at the Oakland gas works of the Pacific Gas and Electric Company since July, 1923, was transferred the latter part of April to the San Jose division of the company, to assume new duties as plant chemist for this division. He succeeded Dr. Elton M. Hogg.

FRANK WILSON OF HILO GAS COMPANY COMPLETES TRIP IN STATES

Frank Wilson, manager of the Hilo Gas Company, Hilo, Hawaii, returned to his fair isle the latter part of April after an extended trip of two months duration through the Coast states and other sections of the West. Mr. Wilson told the home folks that the mainland, and particularly the gas industry, was "on the grow," with prosperity general.

Try This Gas *and* Gas Appliance Catechism!

WESTERN GAS for several months has been featuring the course of lectures which the Gas Appliance Association of Southern California has sponsored. The course has been presented in weekly lesson periods over the past three months, and has now come to a close, marking one of the most successful efforts of its kind that has ever been made in the industry.

Walter M. Berry, who directed the course for the Association, prepared a final quiz for the 193 students who attended the lectures, and gas men everywhere can profit by checking over the examination questions given below, covering many of the fundamentals developed during the course.

Of the 193 students in this course in Gas and Gas Appliances, the following 51 secured the coveted certificates of graduation from the University of California, Extension Division:

E. M. Torrance, B. C. Short, L. R. Ihrig, L. F. Stuffler, P. L. Mink, Guy R. Kendall, C. H. Potter, E. G. Matthews, A. R. Bailey, Neal Engasser, W. E. Hirsch, J. L. McLaughlin, Edward Aspen, E. F. Rettberg, G. E. Mannes, A. P. Johnson, R. S. Roberts, L. F. Kent, E. J. Edwards, C. F. Huebsch, F. H. Seaward, C. S. Rood, R. A. Vincent, H. E. Kunkel, L. J. Wagner, J. A. Simpson, A. T. Howard, C. J. Sommer, B. C. Clarke, W. F. Brandt, T. E. Baretta, M. L. Bibb, Geo. A. Osgood, A. E. Hagen, J. A. Davis, J. P. Jackson, F. M. McNab, E. F. Sherman, Patrick O'Neill, W. A. Wurth, Geo. E. Benson, D. J. Smith, R. W. Campbell, H. F. Schmidt, E. G. Cook, W. L. Stewart, W. C. Schmidt, E. E. Twombly, N. R. Brand, W. H. Bias, Geo. Finney.

Here are the questions which faced the appliance students; how near 100 per cent would your score be on this gas man's intelligence test?

1. Name several men associated with the discovery and early uses of gas.
   Answer: Dr. Clayton of Yorkshire, Murdock of Cornwall, L. P. Lowe of Lynn, Mass.
2. Where and when was the first gas plant established in the United States?
   Answer: Baltimore, Md., 1817.
3. Where and when was the first gas plant established on the Pacific Coast?
   Answer: San Francisco, 1852.
4. What is the average pressure at which gas is supplied to the consumer in Los Angeles?
   Answer: Seven inch water column.
5. What fluctuation in pressure from the established normal pressure is allowed by the State Railroad Commission regulations?
   Answer: At the outlet of the consumer's meter, the pressure must not be less than two inches nor more than 12 inch water column. Each utility must establish a standard pressure, and the pressure at any consumer's service must not vary more than 50 per cent above or below the standard, and no such variation shall be more than four inches, nor more than two inches in a 15 minute period.
6. Name the three methods in which heat is transmitted, and give an example of each.
   Answer: Conduction: Example—Transmission of heat through a bar of iron.
   Answer: Radiation: Example—The direct rays from the sun.

Here are 29 questions forming the final examination in the Gas Appliance Association's course. Try them, but don't be discouraged if you aren't letter-perfect. Many of the students fell by the wayside, too, though a good percentage of them won through. Answer's here given were compiled by the Association's committee from the papers turned in, being judged the best of those submitted.

   Answer: Convection: Example—Transmission of heat by currents as through liquids, or air such as in a furnace.
7. What distinct types represent the development of the gas heater?
   Answer: Open flame heater, copper reflector heaters, asbestos back heaters, gas heaters containing artificial fuel, gas logs, radiant heaters.
8. Name the three types of gas water heaters, and state one important characteristic of each.
   Answer: (1) Combination, (tank and heater)—must be lighted when hot water is needed.
   (2) Storage automatic—operated by a thermostat and having a certain amount of hot water in tank at all times unless emptied.
   (3) Instantaneous automatic—controlled by water pressure; water is heated as long as faucet is open.
9. What is a B.t.u. (British Thermal Unit)?
   Answer: A B.t.u. is the amount of heat necessary to raise one pound of water one degree Fahrenheit at 59 degrees.
10. What is the heating value of the gas served
    a. In the metropolitan area of Los Angeles,
    b. In San Fernando Valley,
    c. Glendale,
    d. Long Beach,
    e. Pasadena,
    f. Santa Monica,
    g. In San Diego,
    h. Santa Barbara?
    Answer: (a) 850, (b) 975, (c) 975, (d) 1175, (e) 850, (f) 850, (g) 550, (h) 700.
11. What important differences have you observed in operating an appliance with mixed gas and natural gas?
    Answer: Natural gas is slower in combustion and requires more air than artificial gas or mixed gas. The orifice for artificial gas must be larger than for natural gas. Although the air requirement is high, it is not possible to open the air shutters of most gas ranges very wide because the flame has a tendency to leave the ports. Even the best adjust- of a gas range with natural gas gives a very soft flame.
12. What are the two methods of supplying air to a furnace?
    Answer: (1) Fresh air intake direct from the outside.
    (2) Gravity or return system.
13. What is the most important precaution to observe in operating a gas heater in a living room?
    Answer: Adequate ventilation.
14. What effect do so-called gas savers have on the operation of a gas range?
    Answer: Produce carbon monoxide where none should exist.
15. How many coats of enamel are required for (1) sheet steel; (2) cast iron?
    Answer: (1) Three coats.
    (2) Two coats.
16. What is the foundation of porcelain enamel?
    Answer: Silica or powdered glass.
17. What metal is used for the operative element of an oven heat regulator, and why is this metal used?
    Answer: Copper, because it expands and contracts uniformly with temperature variations.
18. What items must be taken into consideration in figuring the cost of selling a gas appliance?
    Answer: Buying, cartage, freight, handling, displaying, occupancy, administration, selling, soliciting, advertising, taxes, public utility company services, insurance of all kinds, collections, service calls, reverts, donations, subscriptions, associations.
19. What is the one great essential element in effective newspaper advertising?
    Answer: To appeal to the customer personally.
20. What is a primary requisite of a good salesman?
    Answer: Guts, glee and glue.
21. In approximate figures, what is the proper proportion of air to gas for complete combustion of (1) natural gas; (2) Los Angeles mixed gas of 850 B.t.u.?
    Answer: (1) 9.224 to 11.089.
    (2) 7.993.
22. Which of the five senses (sight, hearing, smell, taste, touch) can be utilized by the salesman in selling a gas appliance?
    Answer: The sense of sight is the most important, and a good display of the appliance is therefore essential. Hearing is next in importance, and the salesman must have a convincing and pleasing manner in presenting the facts regarding the appliance. Cooking schools and demonstrations are valuable because they reach the sense of smell and the sense of taste of the prospective customer. The sense of touch is very important in selling heating appliances. For example, an outdoor display of a radiant heater is very effective on a cold wintry day.
23. What important discovery made it possible to use gas for purposes other than gas lighting?
    Answer: The Bunsen burner or introduction of primary air into the burner.
24. What is the difference between heat and flame temperature?
    Answer: Heat or heating value, or heat of combustion is the B.t.u. produced by combustion of some specific substance. Flame temperature is the actual temperature of the flame produced by combustion.
25. If a gas appliance is burning 10 cu. ft. of gas at 6 inches pressure, what will be the consumption at 10 inches of pressure if no adjustment is made in the appliance?
    Answer: The rate of flow of gas of a given specific gravity issuing from an orifice, varies as the square root of the pressure. Therefore
    $\sqrt{6} : \sqrt{10} :: 10 : X$
    $X = 12.9$ cu. ft.
26. Why are the radiants of a radiant type heater made of clay instead of metal or some other material?
    Answer: Clay is used because it quickly absorbs the heat from the flame and con-

verts it into radiant heat which is thrown into the room. In addition, the porous structure of the clay radiants accelerates combustion.

27. What is the maximum percentage of total heat in the gas that can be utilized for doing useful work if the water vapor formed from combustion escapes uncondensed?
Answer: Approximately 10 per cent less than the gross heating value.
28. What percentage of the total heat in the gas is transmitted as radiant heat from a radiant type heater?
Answer: From 40 to 70 per cent.
29. What is the function of a radiant element in a gas heater, and how important is flame temperature?
Answer: Radiant elements quickly become incandescent and direct the heat in a definite direction where it is needed. The radiation increases as the fourth power of the temperature. The radiation directly from the gas flame is not large, but high flame temperature will result in high temperature in the radiants, and is therefore desirable.

TO VOTE ON OFFICERS OF L. A. G. & E. EMPLOYEE ORGANIZATION

On Tuesday, June 15, employees of the Los Angeles Gas and Electric Corporation will vote on officers and directors of the new employee group which has been organized with an initial membership of 2100.

RESERVE OIL TANK BUILT FOR P. G. & E. IN VALLEJO DISTRICT

Further expansion in the Vallejo district, served by the Pacific Gas and Electric Company is evidenced by the construction of a 5,000 barrel oil tank, to be used in storing a bigger reserve supply of oil for the oil gas generators.

ROY R. HANSEN COMPLETES EASTERN TRIP; VISITS COMPANY OFFICES

Roy R. Hansen, Pacific Coast manager of the Commercial Acetylene Supply Co., Inc., has just returned from a three weeks' trip to the Atlantic seaboard, where he visited the home office of his company in New York City and spent several days in a thorough inspection of the plants at Bound Brook, New Jersey, and Blue Island, near Chicago. Mr. Hansen reports that his company's plans for expansion during the next year include an even greater sales activity on the Pacific Coast, as the officials of the Commercial organization recognize this territory as one of the most rapidly developing markets in the entire United States.

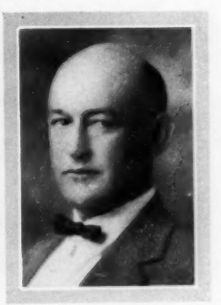
LARGEST HORTONSPHERE WILL SERVE SALT LAKE CITY

In Salt Lake City, Utah, the largest Hortonsphere yet constructed will shortly be in service. This is only the third Hortonsphere built for gas service. The new type holder measures 60 feet in diameter, being a perfect sphere.

There are approximateyl 225 tons of steel in the structure, including 10 tons of rivets. It is composed of 152 sheets of an average weight of 2700 pounds each, all of which were bent to a true section of the sphere before shipment. These sheets are riveted together with triple riveted lap joints. The sphere is located practically entirely above the ground surface and is supported on a concrete ring foundation 36 feet 6 inches in diameter with a bearing stress on the earth support of approximately 2500 pounds per square foot. It looks altogether like a huge balloon about to ascend. Many people have been attracted to the location at 23rd South and 5th East by its unusual appearance.

Advancement *in* So. Counties Staff

C. E. Rutledge



Geo. W. Smith

ADVANCEMENT for Charles E. Rutledge, for three years district manager of Southern Counties Gas Company properties at Santa Barbara, and George W. Smith, who on January 1 of this year was named general commercial agent for the organization, became effective on Monday, May 24th. Mr. Rutledge has been promoted to the more important post of executive in charge of the company's large Orange County territory and Mr. Smith advanced to the district managership of the Santa Barbara division, succeeding Mr. Rutledge. J. C. Hayden, formerly district manager of the Orange County properties, was transferred to the company's executive offices in Los Angeles, as general commercial agent.

Mr. Rutledge has been with the Southern Counties Gas Company since March 11, 1919, when that corporation took over the gas distribution properties of the Santa Barbara Gas & Electric Company. Prior to that date he had been district foreman for the Santa Barbara utility.

On September 1, 1923, when district manager Frank H. Bivens, now general agent for the company, with headquarters in Los Angeles, was transferred from Santa Barbara to Long Beach, Mr. Rutledge was advanced to the position of district manager, succeeding Mr. Bivens.

The Orange County district of the Southern Counties Gas Company, now under Mr. Rutledge's managership, is the second largest on the corporation's system, with more than 20,000 meters. The utility's distribution system covers Santa Ana, headquarters for the territory, Orange, Anaheim, Fullerton, Placentia, Yorba Linda, Olinda, Brea, Buena Park, Garden Grove, Tustin, Costa Mesa, Huntington Beach, Newport and Balboa Beaches, Alamitos and contiguous territory throughout that county. The distance from one end of the Orange County system to the other is approximately 45 miles and the cities and communities of this county are growing steadily.

George W. Smith, Mr. Rutledge's successor at Santa Barbara, is a capable and efficient executive of long standing. He received his early training in the gas business with the Denver Gas & Electric Company, a Henry L. Doherty organization. For two years he was sales manager for the Industrial Gas Appliance Company of New York City. Coming to Los Angeles in 1915, he identified himself with the Economic Gas Company in Los Angeles, as new business manager. During September, 1917, he joined the forces of the Southern Counties Gas Company at Monrovia as a salesman and has remained with that fast growing organization to date.

He made for himself a splendid record at Monrovia and in September, 1919, was transferred to the larger San Pedro district as industrial salesman. On January 16, 1920, he was again advanced, being transferred to the more important Long Beach division of the company. There he remained for several years and late in 1923 was named Assistant District Superintendent under Frank H. Bivens, a position which he filled ably until the company sold its gas properties at Long Beach to the City.

On May 16th, 1924, he was again promoted to the position of Commercial Agent in charge of new business at Santa Monica. During the power shortage of 1924 he was responsible for adding a large amount of industrial business to his company's system. On January 1st of this year he was advanced and transferred to the company's executive offices in Los Angeles as general commercial agent in charge of sales and new business. He served in that capacity until his present promotion which took him to Santa Barbara.

On Wednesday evening, May 19, approximately 100 employees of the Santa Barbara division and their families, assembled at the Santa Barbara gas office to bid farewell to retiring District Manager Rutledge. As a token of their respect and friendship for him, the employees presented Mr. and Mrs. Rutledge with a beautiful silver coffee set and wished him continued success in his public utility work. The new executive, Geo. W. Smith, was introduced by Mr. Rutledge.

The Santa Barbara division is the farthest north on the company's system, with 8,580 active meters.

SIGNAL GASOLINE COMPANY ADDS TO COMPRESSOR EQUIPMENT

The Signal Gasoline Company is installing another 165 H.P. two-cycle Clark compressor in its plant No. 1 at Signal Hill.

NEW YORK OIL DOUBLING CAPACITY OF TEAPOT DOME PLANT

Capacity of its natural gasoline compression plant at Teapot Dome, Wyoming, is being practically doubled, say announcements from the New York Oil Company. The additions will give the plant a gasoline capacity of about 3,000 gallons a day. Addition of 485 h. p., making a total of 1755 h. p. altogether for the plant, is under way, the new installation to be in operation by mid-summer. A 485 h. p. C. & G. Cooper engine is the principal addition.

ANNUAL PICNIC, AT CAJON PARK, DRAWS ATTENDANCE OF 450

Attended by more than 450 people, the Midway Gas Company's annual picnic for its employees and their families was held on Sunday, May 9, at Cajon Park, on the Ridge Route. Features of the picnic were special races, an archery contest, and a barbecue.

NATURAL GAS ADDS TO SUPPLY OF SACRAMENTO GAS SYSTEM

Natural gas from the old Sacramento Gas Company's wells has been turned into the Pacific Gas and Electric Company's system in that city. The wells were acquired some months ago when the P. G. and E. purchased the entire property and system of the Sacramento company. These wells add about 300,000 cu. ft. per day to the city's gas supply.

Greatly Reduced Prices

The following reductions in prices have been made on the Humphrey Radiantfire, effective immediately:

Model Number	San Francisco List Prices Old	New
No. 20	$20.00	$16.50
No. 25	27.00	21.50
No. 30	40.00	31.60
No. 31	30.00	23.60
No. 33	34.00	26.60
No. 35	41.00	34.15

All new prices F. O. B. San Francisco

Lower prices—larger market—bigger business. Every American home where gas is available is now a prospect for the Humphrey Radiantfire There is no limit to sales on either a price or quality basis. Concentrate on the complete line that meets every test, whatever the requirements of the purchaser.

The HUMPHREY

Volume and Production

THE big price reduction goes into effect immediately on six popular Humphey Radiantfire models.

No change whatever has been made in workmanship, design and material.

Increased demand made this generous cut possible.

Enlarged production reduced manufacturing costs.

We are passing this saving on to the buying public through you.

Study these prices and remember the quality.

At these lower figures the field for the Humphey Radiantfire is tremendously broadened.

Progressive gas companies and gas appliance dealers will appreciate this opportunity, most of all becausce it will allow them to concentrate on a single complete line that meets all needs.

GENERAL GAS LIGHT COMPANY, Kalamazoo, Mich.

C. B. BABCOCK

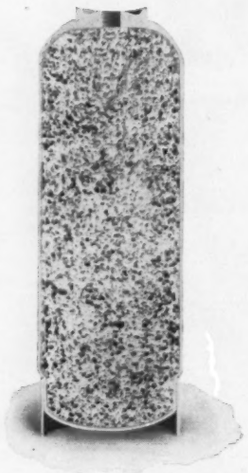
Pacific Coast Manager

135 Bluxome Street San Francisco

Radiantfire

TRADE MARK REG. U.S. PAT. OFF.

The Secret--



of **Commercial Acetylene's** uniform and satisfactory performance lies in the filler that holds the acetylene in the cylinder.

This porous mass that completely fills the container is the most important factor in the storage of the acetylene gas.

Commercial cylinders are filled with a patented composition that guarantees a maximum of efficiency in delivering the acetylene to the torch head.

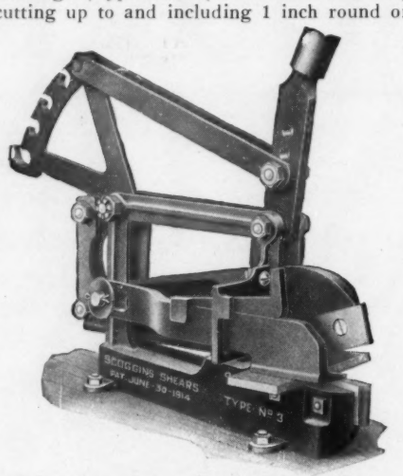
Commercial Acetylene Supply Co., Inc.

417 Market St. San Francisco
5600 Bickett St. Los Angeles
Warehouses in all important centers.

APPLIANCE FEATURES

Manual Metal Cutting Shears

The Industrial Sales Corporation, 443 South San Pedro Street, Los Angeles, Calif., has recently placed on the market the Scoggins patented line of manual metal cutting shears. The line is composed of four models, the largest, type No. 3 (shown in illustration) cutting up to and including 1 inch round or



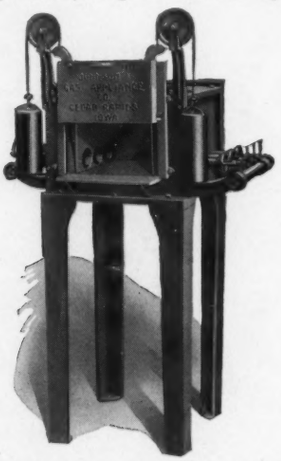
square bar and 4x5/8 inch flat stock. They not only cut round and square bar, flat stock, and work angle iron, but the smaller types split sheet metal of any width, as well. To apply leverage effectively the lever fulcrums have been so located that a slight pressure exerted on the handle is compounded several times before it is transferred to the jaw carrying the cutting blade. The leverage system operates in tension, rather than compression or torsion, thus making possible a light section construction. Electric steel castings are used throughout. Another feature is the patented method of hingeing the jaw. According to the manufacturers, there is no possibility of misalignment of the cutting blades, regardless of the strain, up to the shears' capacity. An illustrated pamplet may be had by addressing Industrial Sales Corporation at the above address.

Oven Furnace

The Johnson Gas Appliance Company of Cedar Rapids, Iowa, has introduced a new size unit in its line of oven furnaces for carbonizing, hardening, annealing, etc. Dimensions of the new furnace, which is known as No. 700, are as follows:

Firebox, 7″ x 11″ x 14″.
Front door opening, 7″ x 11″.
Height to opening, 36½″, overall 48″.
Floor space, 27″ square.
Max. Gas Cons., 240 cu. ft. per hour.
Gas Connection, 1¼″ pipe.
Approx. shipping weight, 725 lbs.

This furnace, say the manufacturers, will maintain temperatures up to 2350 Fahr., making carbonizing and other operations



possible without a forced air blast. The firebox is described as being heavily lined with fire brick, and having a balance door to facilitate opening and closing. Six Johnson Direct Jet Burners are regular equipment.

NEW GAS GENERATOR READY FOR OPERATION IN TUCSON

After a drying out process for the brick work is complete the new 70,000 cu. ft. gas generator recently erected in Tucson by the Tucson Gas, Electric Light and Power Company will be placed in operation, says Sam Headman, manager of the utility. The new equipment, added at an expense of $45,000, will approximately double the gas sendout capacity of the plant, anticipating expected growth of the community during the next five years.

J. O. M'ELLIGATT TO TAKE OVER LOS ANGELES OFFICE

J. O. McElligatt, formerly of the San Francisco office of the Commercial Acetylene Supply Co., Inc., is moving to the Los Angeles headquarters of his organization to take charge of the sales department of this branch. E. S. Bishop has been taking care of the Los Angeles territory, handling both manufacturing and sales, but a considerable expansion in the past year has made it necessary for him to devote his entire time to the plant, where he will act as engineer and superintendent in charge of manufacturing.

DISCUSS GAS CONSERVATION IN KEVIN-SUNBURST FIELD

Conservation of gas in the Kevin-Sunburst field of northern Montana was the subject of discussion at a specially called meeting held at Shelby, Mont., May 6. In the meeting were represeted oil producers, the State Board of Railroad Commissioners, and the Mineral Leasing Divison, U. S. G. S. The joint meeting was presided over by A. J. Findley, chairman of the gas committee of the Montana Chapter, Rocky Mountain Oil and Gas Association. As a result of the meeting a committee on gas conservation was appointed, to report back to another assemblage to be held soon.

MILE A DAY PROGRESS BEING MADE ON CHEYENNE LINE

According to recent report the Colorado-Wyoming Pipe Line Company's projected line from Wellington, Colo., to Cheyenne, Wyo., is progressing at the rate of about a mile a day. The contract is in the hands of Wiley & Gates, and is expected to be complete some time this month.

Display *for* Range *and* Water Heaters

FOR a number of months this section of Western Gas has featured typical window displays of approved design, such as can be rapidly adapted to use in most windows. Above is pictured a display for a range and water heaters, articles of year-round demand. Suggestions for reproducing this window follow:

Any suitable drapery fabric, crepe or sateen, will serve for a background, and can be drawn tight, with no pleating, across the entire back of the window.

Place the stove in the right hand corner at an angle of about 45 degrees, with the automatic water heater against the background to the left of the range. Cover a box about 20″ x 12″ x 12″ with the same material used for the background, place it in the center of the window about 24 inches from the glass and on it set the tank heater. Follow the picture in arrangement of posters for sales messages and in placing the flowers or greens.

The cost of the window should be in the neighborhood of $3.00.

DALLAS OFFICE ESTABLISHED BY C. F. BRAUN & CO.

C. F. Braun & Co., Alhambra, Calif., manufacturers, announce the establishment of a sales and engineering branch office in Dallas, Texas, in charge of V. V. Jacomini, manager.

B. C. ELECTRIC PURCHASES NEW WESTMINISTER GAS COMPANY

Gas properties at New Westminister, British Columbia, have been acquired by the British Columbia Electric Railway Company, and will be operated under the name "New Westminister and Burnaby Gas Company." High pressure transmission mains will bring gas to the community from Vancouver, and the old plant at New Westminster will be abandoned as soon as service from Vancouver is effected.

LARAMIE, WYO., LABORATORY OF BUREAU OF MINES IN GAS STUDY

Some interesting work on natural gas is under way in the laboratory established at the University of Wyoming, Laramie, by the Bureau of Mines in 1924. One study which is under way deals with the Joule-Thompson effect on natural gas, or the amount of cooling produced by the expansion of gas through a porous plug. Efficient well flowing for the conservation of natural gas is also a subject of investigation, and the findings will materially further conservation efforts in Wyoming.

BAINS NOW AT HOME FROM THREE MONTHS TRIP ABROAD

Ferdinand R. Bain, president and general manager of the Southern Counties Gas Company, accompanied by Mrs. Bain, returned to Los Angeles late in May following a three months' trip abroad. The Bains left Los Angeles on February 18, remaining in New York City for several weeks. They sailed for the Continent in March and visited the principal European capitals, including London, Paris, Rome and several watering places.

They left Europe about the middle of May, arriving in New York City on May 21. They returned to Los Angeles late in May and are now back at the La Lomita Rancho, located at Palms, Calif.

NEW PRESSURE FILTERS INSTALLED BY PORTLAND GAS AND COKE CO.

To provide a supply of clean water for cooling the hot valves on waste heat boilers and for boiler feed purposes the Portland Gas & Coke Company has installed three of the new Cochrane Cone Type pressure filters. These filters are 12′ in diameter and are without the internal distributor heads and valves which were often a cause of considerable trouble. The shape of the filters is an inverted cone and the 12″ round layer is located in the upper and largest area of the cone. The gravel and crushed rock filling in the lower portion sustains the sand bed and is self-retaining. The cost of these filters is much less than the original types and the operation has proved very successful. Owing to the operation of suction dredges upstream from the plant, the water has been unusually turbid, but clear water is being obtained with only the occasional use of a coagulant.

AFTER-COOLER SYSTEM NOW SERVES P. G. & E. AT POTRERO WORKS

A new after-cooler system has just been put into operation at the Potrero, San Francisco, plant of the Pacific Gas and Electric Company, through which is run all of the gas sent out into the high pressure lines. There is a total of seven Braun after-coolers, each having a capacity of 190,000 cu. ft. of gas per hour. Five of these are on the high pressure line of the San Francisco system proper, while the other two serve the line that connects the city with San Jose.

Water used in the coolers is pumped in a continuous circuit, through the coils and down over a Braun cooling tower. The gas is reduced in temperature through the application of this system from 250 degrees to 70 degrees. The chief advantage of such an arrangement lies in the fact that the condensate is thrown down at the plant instead of out in the mains. The condensate is then refined for its benzol. This is the first apparatus of this kind to be installed in any of the P. G. and E. plants.

The California

Hot Water in One Minute

Two Sizes for 30 to 60 gallon tanks.

Two Colors, Black Japan or Gray Enamel

A Western Product

Sold Through Dealers Only

Manufactured by

Western Sheet Metal Works

1911 Mission St. San Francisco

THE LATEST

Hammel

Gas Steam Radiators

Unit System of Heating — Steam Heat in Ten Minutes

WE ARE now able to offer some very profitable territory to dealers who can qualify. The *Hammel* line offers a very liberal profit and its repeat orders will build a substantial business for you.

Good Territory for Live Dealers
Write for Literature

Hammel Radiator Corporation

715 So. Figueroa St. Los Angeles

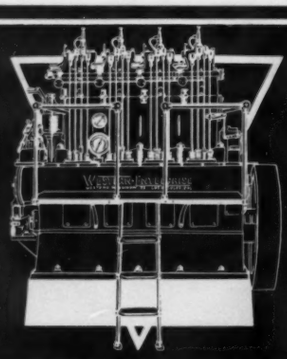
The Loss of Boiler Efficiency

from

SCALE ACCUMULATION

This booklet will be sent free upon application to the

ACME WATER TREATMENT CO.
1220 East 37th St.
Los Angeles, Calif.



WESTERN-ENTERPRISE
DIESEL ENGINES

The most dependable, the most efficient and economical power—Full Diesel—always ready in dry or wet seasons. No expense when idle—minimum costs when operating. As simple as a gas engine. Built in single and multiple cylinder units from 30 to 400 H. P. Write for catalog No. 510.

WESTERN MACHINERY COMPANY
Offices & Factory — 910 North Main St.
LOS ANGELES, CALIFORNIA
San Francisco Offices & Factory
18th and Alabama Streets

A Policy *for* Appliance Departments

(*Continued from Page 27*)

16. That list prices, or the selling price determined at time of pricing, shall be adhered to under all circumstances except on portable lamps, etc., where it is advisable to run sales, and on shopworn articles or types of appliances which have been discontinued.

17. That the local company credit department shall be responsible for credit granted customers on deferred payments in excess of $10. All customers in good standing are entitled to credit up to $10 at time of sale.

18. That partial payment terms shall be offered on all appliances selling for more than $3, no monthly payment to be less than $1.

19. That partial payments on articles selling for $50 or less may be sold on the basis of twelve months to pay, providing the payment is not less than $1 per month; articles selling for more than $50 and less than $150 may be sold on the basis of eighteen months to pay; articles selling for more than $150 may be sold on the basis of twenty to twenty-four months to pay according to the selling price.

20. That employes shall be granted special discount for themselves or their immediate family on the basis of cost plus 10 per cent on cash sales, and plus 8 per cent additional on time payment sales. That, for advertising purposes, electric ranges and refrigerators shall be sold to officers, department heads, and employes on a more reasonable partial payment basis than to customers.

21. That all employes of the Appliance Sales Department shall pass the same tests as any other employes of the company, shall be the best type obtainable, preferably young, and men who are capable of carrying into the homes of our customers the policies of the company.

22. That a salary and commission, or commission only, depending on type of work, or drawing account on a commission basis, shall be effective at all properties for all outside salesmen as well as the chief salesmen or division appliance sales manager.

23. That all employes of the Appliance Sales Department shall be considered a part of the organization the same as any other employe.

24. That this department shall be immediately informed of any change in rates affecting the appliance sales.

25. That this department shall be permitted to carry on any demonstrations which it feels are necessary properly to put through sales or carry on campaigns.

26. That the operation of this department shall be one of continuous activity through store sales, mail order and house to house solicitation campaigns.

27. That complete radiosets and repair parts shall be sold wherever it is felt a good market exists for first class equipment. This department will necessarily carry with it certain policies to be formulated.

28. That, as soon as enough stores are developed in a division, a window decorator shall be employed to supervise the displays in all show windows.

29. That this department shall have the privilege of interesting all employes to obtain prospects and expect their help at all times in making sales. During dull periods, bonuses may be paid to employes for live prospects but only on stated campaigns.

30. That, inasmuch as this department is adding load to the lines or gas mains at practically no additional expense to the company, nothing shall stand in its way and every other department shall render 100 per cent cooperation.

The above policy, obviously, naturally will be more or less flexible for the time being in order to meet conditions on various properties, but as time goes on and the Appliance Department becomes more stabilized these rules and regulations will be elaborated upon and become standards of operation.

Another question very often encountered is: What do the dealers think about your going into the appliance business? Well, this can be answered in more than one way, but I think the correct answer is a question: Who is running your business—you or the dealers? In other words, are you leading the procession or are you following?

Dealers Satisfied

However, as may well be supposed, there were some who were not in sympathy with the movement and it was necessary to meet with dealers in some of the Oklahoma towns to let them know what our policy was going to be, but inasmuch as there is nothing new in our method for getting business from that which they might try, the dealers as a rule were satisfied after hearing our side of the question.

As time has gone on we have had nothing but good news from the dealers. They report good business and some of them have stated that they have sold more appliances since we have been in business. These statements are now being checked up in the hope that this department can have definite information as to how they now feel about our merchandising efforts.

General Business Will Increase

Where the utility consistently goes about its business of selling appliances to customers, continually talking up the advantages of doing things electrically and advertising its wares, there will be considerably more appliance business for dealers than where the central station company is content to permit control of this important source of revenue to drift into the hands of those who care little about the quality of the goods they sell and still less about the interests of the customer or the utility. The central station industry in its need for more revenue per customer can ill afford to experiment with indifferent outside agencies for increasing its business.

Stock Sales Benefit

It may be interesting to learn that the installation of appliance stores in the Oklahoma offices has been the means of immediately increasing sales of securities. Actual figures are not available but this has been the case wherever we have installed stores.

Such expressions as the following are always heard on openings: "Well, now this looks like a business institution and I am going to buy some of your stock." Not that our offices have not been business institutions, but because the people feel that instead of walking into an office where all they are supposed to do is to pay their bills and hurry out, they now find that they are welcome whether they have a bill to pay or not, and can shop around with the same ease that they can in any other store.

California Gasoline Corp. Undergoes Reorganization

REORGANIZATION of the California Gasoline Corporation, now known as the California Gasoline Company, became effective during May, introducing a $10,000,000 operator into the California casinghead field. The California Gasoline Corporation was merged with the California Petroleum Corporation some time ago and under the reorganization the California Gasoline Company will operate the natural gasoline plants of the California Petroleum's natural gas department, taking over all contracts.

R. E. Bering

R. E. Bering, recently elected vice president of the California Petroleum Corporation, and formerly president of the California Gasoline Corporation, is active head of the new casinghead organization, being designated as vice president and general manager. Mr. Bering's rise in the natural gasoline industry of California has been a rapid one, the organization of several companies being to his credit. He entered the oil game with his employ in the geological department of the Associated Oil Company, about seven years ago. In 1920 he organized the San Martinez Oil Company, with J. A. Brower, and two years later formed the Signal Gasoline Corporation. Later in 1922 he organized the California Gasoline Company, and in 1923 the South West Gasoline Company, the two being consolidated in 1924 to form the California Gasoline Corporation.

J. E. Hare, J. W. Sherman and E. G. Starr, all of whom have been associated with Mr. Bering in the past, will share in the direction of the new corporation.

NATURAL GASOLINE MFGRS. ELECT OFFICERS AT CONVENTION

E. L. Peck, manager of the Empire Gasoline Co., Bartlesville, Okla., was unanimously re-elected president of the Association of Natural Gasoline Manufacturers at its annual convention held May 5 and 6 at Tulsa. The vice-presidents re-elected were: F. L. Chase, vice-president of the Lone Star Gas Co., Dallas, Tex.; A. M. Ballard, sales manager of the Sun Oil Co., Tulsa, and F. E. Rice, superintendent of the natural gasoline department, Phillips Petroleum Co., Bartlesville, Okla. A. V. Bourque is secretary and treasurer of the organization.

UNION OIL CO. TO HAVE 16-UNIT CLARK PLANT AT DOMINGUEZ

The Union Oil Company has just purchased from the Smith Booth Usher Company eight 165 H.P. two-Cycle, Clark direct driven compressors, which will be installed in their present eight-unit compressor station at Dominguez. Ten of these units are fitted with low pressure cylinders which pump the gas through the absorption plant, and the remaining six are fitted with high pressure for pumping to wells. When complete this will be one of the largest compressor stations on the coast. Everything follows out the direct driven idea of the main units, even to the circulating pumps for the cooling towers, which are low pressure steam turbine driven.

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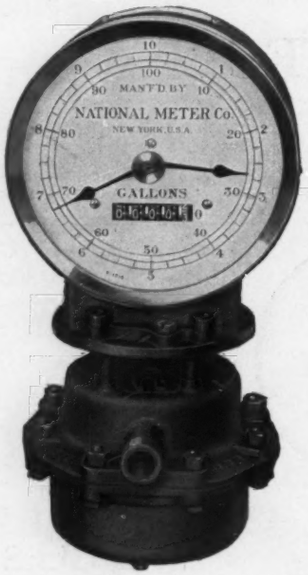
OIL METERS



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NATURAL GAS GASOLINE OPERATIONS

Compiled by J. W. MASHAW

Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

STARTING with this month the unit of all liquid refined products will be the barrel (42 U. S. gallon), instead of the gallon as used heretofore. This change is the result of a recent canvas made by the Bureau of Mines which showed a majority of four to one in favor of the change.

One hundred and forty-seven natural-gas gasoline plants, with a daily indicated capacity of 1,141,231 thousand cubic feet, report a recovery of 29,276,487 gallons of natural-gas gasoline from 21,798,483 thousand cubic feet of gas treated, in April. This is a decrease of 226 barrels in daily average production.

Utilization of natural-gas gasoline amounted to 655,334 barrels, a decrease under March of 76,734 barrels. Daily average utilization of 21,844 barrels was 1,391 barrels less than daily average production of 23,235 barrels.

Stocks of natural-gas gasoline at the end of March amounted to 205,841 barrels, of which 21,770 barrels were reported by natural-gas gasoline plant operators and 184,071 barrels by refinery operators. Seventy-five thousand barrels of this stock increase is due to stock transfer by one of the large companies. This is an increase of 121,748 barrels over March stocks. This stock figure of 205,841 barrels is approximately nine and one-half days' supply at the current rate of consumption.

Production of gasoline during the month of April amounted to 3,967,489 barrels, a daily average of 132,249 barrels. This is a decrease of 41,112 barrels, or 1.3 per cent under March output and 755,466 barrels, or 23.52 per cent over the output of April, 1925.

Of the gasoline produced, 4,924 barrels were reported as finished gasoline produced by natural-gas gasoline plant operators.

CALIFORNIA NATURAL-GAS GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS
April, 1926

PRODUCTION

Type of Plant	*Gas Treated M Cu. Ft.*	*Natural-Gas Gasoline Produced Gallons*	*Gasoline Recovery per MCF Gas Treated*
Oil Absorption	13,734,572	18,863,559	1.373 Gal.
Compressor	530,095	424,284	.800 Gal.
Combined Comp. and Oil Absorption	4,120,539	5,996,511	1.455 Gal.
Combined Oil and Charcoal Absorption	2,227,452	3,863,077	1.743 Gal.
Charcoal Absorption	1,185,825	113,809	.096 Gal.
Drip		15,247	..... Gal.
Totals	21,798,483	29,276,487	1.343 Gal.

Finished Gasoline produced at plants 4,924 Barrels.

DISTRIBUTION

Stocks first of month	.....	84,093 Bbl.
Production during month	.....	697,059 Bbl.
Quantity mixed with crude or unfinished oils	255,482 Bbl.	..... Bbl.
Used in blending at refineries	385,328 Bbl.	..... Bbl.
Stocks end of month	205,841 Bbl.	..... Bbl.
Used at Plants, Shortage and Evaporation losses	14,524 Bbl.	..... Bbl.
Balance	.....	79,023 Bbl.
	861,175 Bbl.	861,175 Bbl

STOCKS

Natural-gas gasoline held by Natural Gas Gasoline Plant Operators	914,346 Gal. or	21,770 Bbl.
Natural-gas gasoline held by Refiners	7,730,982 Gal. or	184,071 Bbl.
Totals	8,645,328 Gal. or	205,841 Bbl.

Finished Gasoline (motor fuel) held by natural gas gasoline plant operators 461 Bbl.

STANDARD ENGINEERING CO. PLANT TREATING NEWHALL MIDWAY GAS

A gasoline extraction plant is nearing completion and will soon be in operation at the Newhall fields, treating gas from the lines of the Midway Gas Company. The Southern Engineering Company are operating the plant.

MUTUAL GASOLINE CO. TO ERECT PLANT AT HUNTINGTON BEACH

A permit to build a gasoline absorption plant at 414 Nineteenth St., Huntington Beach, has been granted the Mutual Gasoline Company, the plant cost being estimated at $15,000. A portable plant will be erected first, until gas possibilities of the field are better known. Arrangements are now being made for gathering lines. W. L. Rifenberick, formerly with the Shell Company of California, heads the Mutual Gasoline Company, which also operates a charcoal recovery plant at Signal Hill.

PUBLIC SPEAKING CLASS FOR PACIFIC GASOLINE MEN

On May 10 the Northern Division class in public speaking was launched by the Pacific Gasoline Company, with an attendance of 38 aspiring orators.

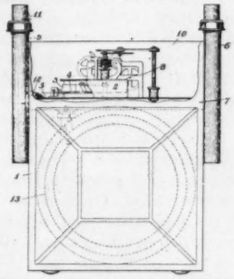
REFRIGERATION UNDER STUDY BY ROXANA PETROLEUM CORP.

Experimental work on refrigeration is being carried on by the Roxana Petroleum Corp. under the direction of S. O. Carney. The process consists of compressing a highly volatile, narrow cut from natural gas, condensing and cooling it under pressure, conducting the product to heat exchangers, where it is vaporized for the purpose of robbing oil or gasoline and gas of their heat. The vaporized refrigerant is then returned to the compressor for recycling. The process is a straight refrigeration one depending on the latent heat of vaporization for its operation.

THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

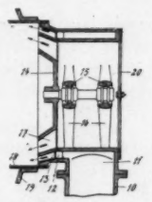
1,570,214. GAS METER. THOMAS FOX, Liverpool, England. Filed Nov. 2, 1921. Serial No. 512,293. 2 Claims. (Cl. 73—1.)

1. The method of protecting exposed parts of a dry type gas meter against the action of the gas, which consists in providing a shallow bath of protective liquid around the valves, at a level below that of the valve seating, so that the liquid is delivered in small quantities to the valves by capillary action and by them directed



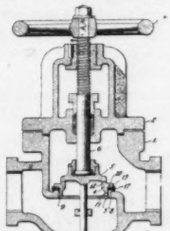
to the leather diaphragm as a result of the movement of said valves the oil also creeping over the surface of the valve chamber.

1,569,507 BURNER FOR GAS FURNACES. EMIL OPDERBECK, Gelsenkirchen, Germany, assignor to Heinrich Koppers, Essen-Ruhr, Germany. Filed Aug. 24, 1921. Serial No. 494,954. 13 Claims. (Cl. 158—99.) (Granted under the provisions of the act of Mar. 3, 1921, 41 Stat. L., 1313.)



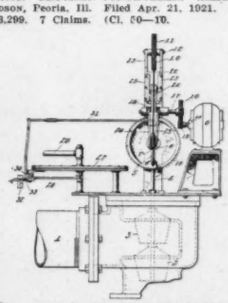
1 In a burner for industrial gas furnaces in combination, an air duct and a gas duct, rotary means in the path of the gas traversing said gas duct arranged to be set revolving by the gas and means associated with said rotary means for transmitting the energy of flow of the gas onto the air in said air duct.

1,540,380. VALVE. WYLIE G. WILSON, Jersey City, N. J., assignor to Loose Seat Valve Company, a Corporation of Delaware. Filed Oct. 20, 1922. Serial No. 595,780. 11 Claims. (Cl. 251—167.)



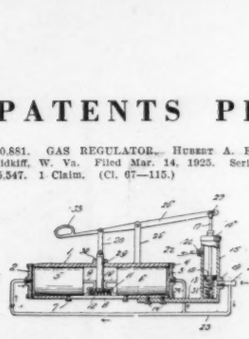
1. In a valve a gasket formed of suitable material to accomplish a seal between opposed surfaces, such gasket having the characteristic of being normally of uniform thickness and compressible and of a width greater than that of the opposed surfaces between which it is mounted, in combination with suitable opposed faces between which said gasket is mounted and means for pressing said faces together.

1,570,008. GAS-MAIN CONTROLLER. RALPH B. RICHARDSON, Peoria, Ill. Filed Apr. 21, 1921. Serial No. 463,299. 7 Claims. (Cl. 50—10.



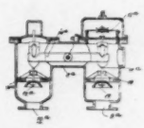
1. In a gas main controller in combination with the valves of a collecting main, a motor, reciprocally operated means for actuating said valves, means for continuously operating said valve actuating means from said motor, said valve actuating means including oscillatory means arranged for connection with said valves to alternately move the same in opposite directions, an actuating means operable by and under the changed conditions of pressure in said collecting main, a rocker arm connected between said actuating means and said oscillatory means, and an adjustable weight connected with said rocker arm, whereby the pressure at which the fluid is to be handled may be regulated.

1,570,881. GAS REGULATOR. HUBERT A. ELKINS, Midkiff, W. Va. Filed Mar. 14, 1925. Serial No. 15,547. 1 Claim. (Cl. 67—115.)



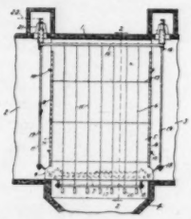
In a gas regulator, a valve structure in the gas line, a cylinder, a pair of pistons in the cylinder, frames on the inner ends of the pistons, a slide bar extending through the cylinder between the pistons, spring means between the frames tending to normally hold the pistons on the ends of the cylinders, pipes connecting the gas line with the ends of the cylinder so that the pressure will tend to maintain the pistons toward each other with the frames in abutment so that the slide bar may rest thereon, a lever for operating the valve, and a link connecting the slide bar to the lever so that the valve will be opened when the slide bar rests on the frames and so that the valve will be closed when the slide bar is disposed between the frame.

1,570,984. GAS MIXER. FRIEDRICH WOLFF, Berlin, Germany, assignor to Selas Aktiengesellschaft, Berlin, Germany. Filed Dec. 21, 1923. Serial No. 682,078 2 Claims. (Cl. 48—184.)



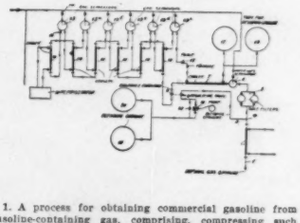
1. In a gas mixing arrangement, a gas conduit and an air conduit introducing gas and air under pressure, a mixing device to which said conduits lead, a stop valve in each of the said conduits, each stop valve including a casing forming part of one of the said conduits and also including a diaphragm in said casing and acted upon by the pressure in the conduit on one side, and by atmospheric pressure on the other side, a regulating valve, a two-arm lever between the regulating valve and the associated diaphragm, and links to connect one end of the said two-arm lever to the regulating valve and the other to the diaphragm so as to close the regulating valve on the pressure in one of the conduits falling below a certain amount

1,569,529. APPARATUS FOR ELECTRICAL SEPARATION OF SUSPENDED MATERIAL FROM GASES. EVALD ANDERSON, Alhambra, Calif., assignor to International Precipitation Company, Los Angeles, Calif., a Corporation of California Filed Apr. 13, 1925. Serial No. 22,846. 4 Claims. (Cl. 183—7.)



1. A collecting electrode for electrical precipitators comprising a body of high resistance material and grounded metallic supporting and grounding frame means in contact with but wholly outside of said body, the construction being such that a continuous electrical connection is established from every part of the collecting electrode to the said supporting and grounding means through the high resistance material of said electrodes.

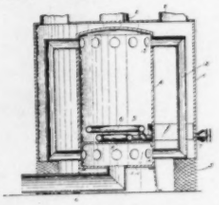
1,569,433. PROCESS OF OBTAINING COMMERCIAL GASOLINE FROM NATURAL-GAS GASOLINE. HERMAN JAN MACKENZIE and ALEXANDER WILHELMUS STERNBERGH, Tjepoe, Java, Dutch East Indies, assignors to De Bataafsche Petroleum Maatschappij, The Hague, Netherlands. Filed Sept. 26, 1923. Serial No. 665,018. 3 Claims. (Cl. 196—12.)



1. A process for obtaining commercial gasoline from gasoline-containing gas, comprising, compressing such gas, cooling the compressed gas to normal temperature while maintaining the compression pressure and separating out the resulting natural gas gasoline under pressure, then mixing the natural gas gasoline with blending gasoline, cooling the mixture to a relatively low temperature while maintaining it compressed, then releasing the pressure on the mixture to atmospheric pressure, then separating out the resulting gas from the liquid, the mixture being gradually brought to atmospheric temperature after the pressure has reached atmospheric, the separating out of the gas from the liquid being progressive and occurring over the entire period during which the mixture is coming to atmospheric temperature.

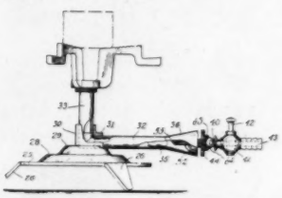
1,570,612. GAS FURNACE. LEONORE CINQ-MARS, San Francisco, Calif. Filed Mar. 3, 1924. Serial No. 696,524. 1 Claim. (Cl. 126—116.)

A heater comprising a burner casing closed at its upper and lower ends, a false bottom mounted within the casing at a point spaced above the lower end of the casing and defining between it and the lower end a collection chamber, said casing having a plurality of equi-distantly spaced openings disposed between the lower end and false bottom, a plurality of similarly arranged openings adjacent the upper end of the casing, a burner mounted within the casing above the false bottom, said casing having a centrally disposed outlet opening at its lower end, an outlet flue in communication with the opening, a plurality of upright flues arranged in a circular series around and spaced from the casing, lateral extensions at the ends of said flues communicating with the openings at the upper and lower ends of the casing,



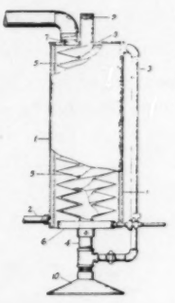
another casing surrounding the first named casing and last named flues and being provided with hot air discharge openings at its upper end and atmospheric air intake openings at its lower end.

1,570,683. GAS BURNER. MILTON M. KOHN, New York, N. Y. Filed June 20, 1923. Serial No. 646,980½. 8 Claims. (Cl. 158—118.)



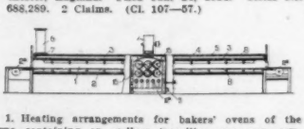
1 In a gas burner having an inlet tube, a hollow cone removably secured in said tube, a hollow screw supplying gas to said tube, means in said screw for controlling the passage therethrough, means for entering air therein, and a plurality of helical vanes integral in said cone for causing the entering air to assume a whirling motion prior to commingling with the gas.

1,570,760. BOILER. FRANK ALBERT MARDEN and CARL MICHEL RAITHEL, Portland, Oreg. Filed Mar. 18, 1922. Serial No 544,741. 1 Claim. (Cl. 122—165.)



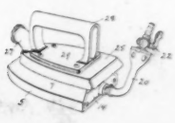
In a gas fired boiler for domestic purposes, a vertical, hollow screw with double V-shaped thread, cast integrally throughout the entire length, an axially disposed supporting pipe at the bottom of said screw and cast integrally with said screw, an axially disposed riser at the top of said screw and cast integrally with said screw, a water jacket enclosing said screw throughout the entire length, a receiving water pipe near the bottom of the water jacket, said receiving water pipe communicating with the interior of the water jacket, a discharging water pipe near the top of the water jacket and on a side opposite to the receiving water pipe, said discharging water pipe communicating with the interior of the water jacket, and a connecting pipe leading from the discharging water pipe downwardly below the bottom of the water jacket to establish communication with the screw and riser through the supporting pipe.

1,569,009. BAKER'S OVEN. WILLIAM DREDGE, Manchester, England. Filed Jan. 24, 1924. Serial No. 688,289. 2 Claims. (Cl. 107—57.)



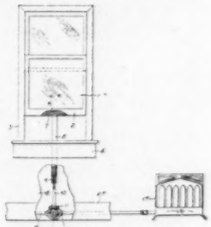
1. Heating arrangements for bakers' ovens of the type containing an endless travelling conveyor, comprising, in combination, an air-heating chamber on the side of the oven; a plurality of gaseous fuel burners in said chamber; means for supplying high pressure combustible gas to the burner-nozzles; means for admitting and forcing air into the heating-chamber; conduits passing through the wall of the heating-chamber for introducing the heated air and products of combustion into the oven; means for controlling said conduits; and distributing pipes connected to the said conduits and arranged to distribute the heated air and products of combustion on both sides of the traveling conveyor.

1,570,808. GAS IRON. HARRY WEINTRAUB, New York, N. Y. Filed May 19, 1925. Serial No. 31,404. 3 Claims. (Cl. 158—23.1.)



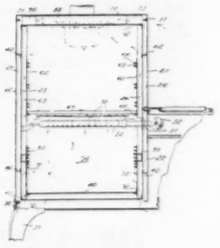
3. A gas iron of the class described comprising a hollow body open at one end, a ribbed heating surface on the bottom and interior of said body, a flat plate having an integral end wall formed therewith extending within said body in proximity to the ribbed surface and closing said open end, a pipe connection including means for regulating a mixture of air and gaseous fuel discharging within said body and beneath the plate, a cover plate having an exhaust nozzle at its front end in communication with the interior of said body whereby the incomplete products of combustion are discharged, an insulating pad between the top of said body and cover plate, a hollow handle attached to the cover plate and an insulating pad between the said handle and cover plate.

1,570,232. GAS-VALVE-CONTROLLED VENTILATING DEVICE. HARRY DYER, Los Angeles, Calif. Filed Feb. 28, 1925. Serial No. 12,548. 2 Claims. (Cl. 98—37.)



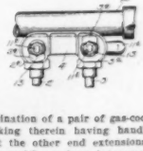
1 In combination with a window and a gas supply, a valve having a rotatable stem adapted to control the gas supply, a gear on said stem, a screw shaft and a second gear mounted on the shaft adapted to mesh with the first gear, a hollow threaded sleeve on the window adapted to engage the screw shaft, being adapted to raise the window when the valve stem is turned in one direction and to close the window when the valve stem is turned in the other direction

1,578,938. COOK-STOVE-OVEN CONSTRUCTION. ALBERT H. TINNERMAN, Cleveland, Ohio. Filed Aug. 20, 1923. Serial No. 658,281. 1 Claim. (Cl. 126—39.)



A cooking range construction comprising a double wall baking and broiler oven construction formed by inner and outer vertically disposed panel members spaced from each other and open at the top and bottom to form air passages, two of said inner panel members being oppositely disposed and having vertically extending depressions therein forming passageways establishing communication between the exterior of the structure and the broiler oven and between the broiler oven and baking oven, a spacing member baffles disposed between the inner and outer panel members, obstructing the top free passage of air from the bottom to the top of the structure, an inner top oven panel member extending over the depressed ends of said inner side members and terminating short of the outer side panels whereby free passageways for cool air are afforded at the corners of the oven structure.

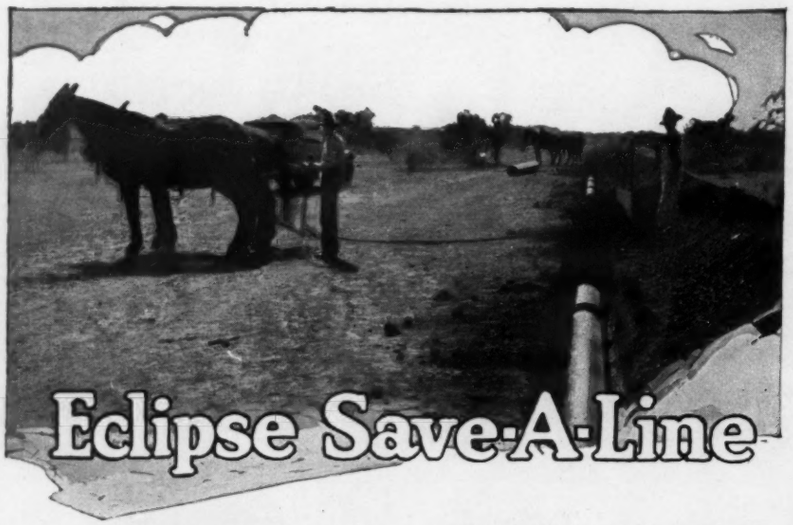
1,571,053. GAS RANGE. AUGUSTUS F HARTER, Oak Park, Ill., assignor to Cribben & Sexton Company, Chicago, Ill., a Corporation of Illinois. Filed Aug. 6, 1924. Serial No. 730,399. 4 Claims. (Cl. 126—42.)



1 The combination of a pair of gas-cock casings, taper gas-cocks working therein having handles at one end and having at the other end extensions equipped with cams rigid therewith, springs interposed between said casings and cams, and a cam-shifted lock-plate connected with said extensions and serving, when either gas-cock is open, to lock the other gas-cock.

1,536,463. ABSORPTION PROCESS. ERIC HJALMAR WESTLING, Redwood City, Calif. Filed June 12, 1922. Serial No. 567,733. 10 Claims. (Cl. 23—1.)

1. The process of absorbing gases or vapors in liquids which consists in introducing the gas into a body of the liquid and causing the kinetic energy of the gas to convert the liquid into a fog and condensing the fog.



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Eclipse Save-A-Line forms a thick, elastic film or coating, reinforced with asbestos fibre, which contracts and expands with the pipe and is unaffected by moisture, alkali, lime or electrolysis. It can be applied without heating and by inexperienced labor.

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Their experience is your guarantee of satisfaction

This Product was formerly our Eclipse Asbestos Pipe Line Paint

The Eclipse Paint & Mfg. Co.

Cleveland, Ohio, U. S. A.

Dallas Denver San Francisco Newark Philadelphia

NEW UTILIZATION PAMPHLET FOR PACIFIC GAS AND ELECTRIC CO.

"Industrial Heating Progress" is the title of a new pamphlet that is to be issued from time to time by the Sales Department of the Pacific Gas and Electric Company. The folder is to be devoted primarily to the utilization of gas in industry, and the first issue contains a number of illustrations with brief printed descriptions of how gas is being utilized in a number of San Francisco commercial and manufacturing establishments. Gas as used in the printing industry, for example, is one of the short articles, followed by a description of the gas fired equipment in use in an automobile cleaning establishment, the gas flame as applied in the mechanical industry, etc. The publication is of unusual interest as a testimonial to the growing use of gas.

5,000,000 CU. FT. GASSER STRUCK IN NEW ZEALAND DRILLING

In the drilling of a well for oil at New Plymouth, New Zealand, an amount of gas in excess of 5,000,000 cubic foot per day was found at depth of 1,555 feet with a rock pressure of 625 pounds per square inch. It analyzed 78 per cent carbon dioxide, the balance being methane and ethane.

CONFERENCE ON COAL USE AT PITTSBURGH IN NOVEMBER

An international conference on coal will be held at the Carnegie Institute of Technology in Pittsburgh the end of November, 1926, according to an announcement of plans now being devised by Dr. Thomas S. Baker, president of the Institution. The fundamental idea of the meeting, it is announced, is the discussion of new uses of bituminous coal.

Compensation *for* Salesmen

(*Continued from Page 20*)

Territory Salesmen: The value of the straight salary plan for territory salesmen, both from the salesman's point of view and the company's, has been generally recognized as doubtful. It fails to attract ambitious men, as their earning capacity is limited, no matter how much effort they put back of their work, or how great their gross sales in dollars and cents. This plan usually results in a slowing up of activities in the new business department, which naturally is reflected in gas sales. It was usually found that as long as the salesmen under this plan could maintain sufficient gross sales to justify the company continuing his employment, that there was no further effort on his part to build up his gross beyond this point, with the result that only men to whom success meant very little were attracted. In order to merchandise successfully, a plan of compensation must be devised that will attract and hold high class men, a plan that will be remunerative to salesmen according to the amount of effort and ability they put into their work. A flat salary basis will not accomplish this.

The *straight commission plan* apparently had the opposite effect. It attracted high-powered salesmen, whose only thought was their pay check. Consequently, the interest of the companies employing this method suffered. All thought of service and responsibility to the customer was forgotten, and methods and schemes were used by the salesmen that were not in accord with good business practices, let alone the high ideals established by our industry. The writer's experience with this plan of compensation is that it caused many complaints of misrepresentation, also over-selling, resulting in more appliances returned for non-pay. The salesmen very seldom, if ever, called back to see if his customer was satisfied or if the installation was properly made, with the thought in mind of giving the new purchasers proper instructions in the use of this appliance, warning them against waste in the use of gas, or teaching them to read their meter; all of which is necessary if we wish to secure and keep the good-will and continued patronage of our customers. After a careful analysis of this compensation plan, we will find that when it is applied to the merchandising department of a gas company it usually works out to the advantage of the salesmen and to the disadvantage of the company.

Flat Salary and Bonus Plan: In discussing this method of compensation the writer will attempt to set forth the plan as adopted and used by his company during the last three years. The schedule used is as follows:

The Salesman's Compensation

The salesman starts at $125.00 per month and continues during a three months training period. After this $100.00 per month flat salary and bonus on gross sales as follows is paid:

Sales per month	Bonus per month
$ 600.00	$ 25.00
800.00	35.00
1000.00	40.00
1200.00	50.00
1400.00	65.00
1600.00	85.00
1800.00	105.00
2000.00	125.00

In addition to the above schedule small monthly bonuses are given, when it is desired to further the sale of any certain appliance. We have found that this plan gives the salesmen a real incentive to greater efforts. On the other hand, he feels amply repaid for work that has no apparent im-

mediate results or that does not increase his gross sales at the end of the month. We do not consider our employees in this department sales people in the strict sense of the term, but rather contact or service people. They are required to handle all company business in their respective territories, such as taking meter applications, settling complaints covering appliances, high bills, service, etc. They call back on all appliances set in their territory and check up to see that the installation is properly made and that the consumer is instructed in the proper use of the appliance. The customer is also instructed against wasting gas, taught how to read his meter and budget his use of gas; all of which results in friendly relations between the customer and the company.

Some may think that this method may possibly slow up the actual sales of the organization. Contrary to this idea sales are actually increased, as the satisfied customer, one with whom the salesman has established proper relations, is a wonderful advertisement and in most cases is more than willing to recommend to his or her friend and neighbor, the kind of appliances he has purchased, as well as spreading goodwill for the company and the salesman. Cases are very frequent where customers call up our sales people and give them the name and address of friends who are possible prospects.

After a three year trial of this system a careful analysis shows a higher class of salesmen employed, less turn-over, increased gross sales throughout the entire year and better public relations established with our customers.

Laying *the* CO Bogy

(*Continued from Page 22*)

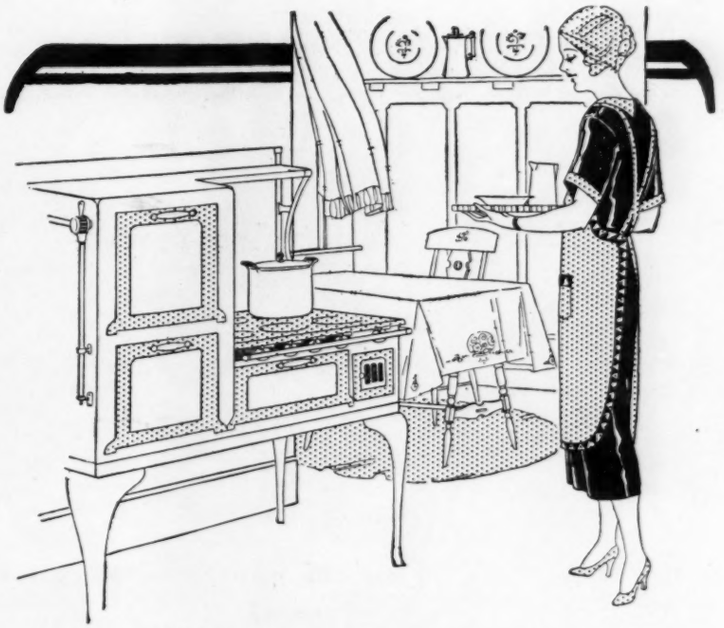
heaters are another common abomination.

Birds and mice have had a substantial usage in the work of discovering the presence of carbon monoxide fumes as well as other noxious gas in mines, tunnels, and other localities where air was to be tested for fitness to be breathed by human beings. Canary birds have been especially in demand for this purpose because very slight traces of the gas cause them to respond with severe illness or death. Their use, however, has been limited almost entirely to mine work.

The laboratory method of discovering carbon monoxide was by means of selective absorption in the Orsat or other devices similar in principle. These outfits, when carefully used, were accurate to about 2/10 of one per cent. The Haldane apparatus was somewhat more accurate, since it made use of slow combustion for oxidizing the carbon monoxide, but this device was still subject to the disadvantages of measuring by absorption.

The iodine pentoxide apparatus was the most accurate of any of the older means of carbon monoxide determination, being capable of showing concentrations as low as 3 parts in 100,000. Still, however, there was the long time interval in working the sample, at least 30 minutes being required for making an analysis.

The pyrotannic acid pocket detector set was an interesting innovation for approximating by means of color reaction the percent concentration of carbon monoxide in the haemoglobin of the blood, thereby showing the conditions of a patient who had been subject to exposure in an atmosphere of carbon monoxide. This detector also provided a scheme for analyzing gas samples by absorption of CO in known mixtures of pure blood and water, but manipulation was in-



Let the *new* Gas Range brighten your kitchen

Local dealers who display the Gas Appliance Seal sell this new Gas Range. It has the Oven Heat Control.

Let its softness of outline—its white and blue-grey enamel harmonize with the walls, curtains and linoleum. In whatever way your kitchen is decorated the **new** Gas Range will make this room seem cozier; the hours you spend there, happier.

For the mission of the **new** Gas Range is to brighten kitchens and to add beauty as well as to skilfully cook and bake for you.

PACIFIC GAS AND ELECTRIC COMPANY

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by Californians

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One of the cooperative advertisements published in all newspapers in the Gas territory served by the Pacific Gas and Electric Company.

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of Progress

We are proud of our Service
in the West

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convenient and results not entirely satisfactory from the standpoint of efficient laboratory practice.

In an enormous industry like the gas business, where every vestige of future success depends upon the safe, efficient, and convenient utilization of gas in appliances, it is apparent that the above described means were far from satisfactory in testing the safety of gas utilizers for production of carbon monoxide. To obtain gas rates and settings which could be recommended for safety required much tedious laboratory procedure. This was more particularly true because constant checking was necessary to be sure that experimental apparatus was functioning properly.

However, it was not this phase of the business which was instrumental in improving the old time methods. The final cause was wrapped up in the fact that gasoline motor vehicles discharge an average of 7.1% carbon monoxide in the volume of their exhaust gases. With the dense motor traffic of the present day, this feature has become a very important consideration in connection with public health. The situation developed into a special menace in long vehicular tunnels under rivers or in the hilly parts of cities, and called for new developments in ventilation engineering and carbon monoxide control.

Incentive for Latest Developments

The Bureau of Mines assisted in designing the ventilating system for the Holland tunnels, extending for a distance of about 9,000 feet under the Hudson River, between New York and Jersey City. The same data were used on the Liberty tunnels, which are 5,880 feet long and pierce the South Hills of Pittsburgh, Pa.

In order to properly permit control of the ventilation machinery and keep the percentage of carbon monoxide in the tunnels at a safe value and at the same time not waste power in undue ventilation, the Bureau of Mines undertook to develop an automatic apparatus capable of recording continuously very low percentages of CO.

After extended experimentation, a recorder was produced which measured by means of thermo-couples the increased temperature of sample gases when CO and oxygen reacted chemically in the presence of a catalyst, and this device was finally made to be inappreciably affected by the presence of other gases, and capable of continuously and accurately recording the highly diluted CO down to one part CO per million parts of air.

The Carbon Monoxide Recorder

The principle of operation of the Bureau of Mines' recorder is based upon the fact that when a given quantity of carbon monoxide is oxidized to carbon dioxide, a definite amount of heat is generated. A catalyst called hopcalite is used to further the union of oxygen and carbon monoxide. Thermo-couples are used to generate voltage which is proportional to increase in temperature, which in turn varies directly with the percentage of CO. The varying potential of the thermo-couples operates the pen of a Leeds and Northrup Recording Potentiometer, and the corresponding red line reads directly in per cent CO from 0% to .18%. The device may be calibrated for other ranges, but for its original purpose this was the desirable setting.

The picture of the recorder is taken slightly from above to show somewhat better the details of construction of a recent model built by the Mine Safety Appliances Company, of Pittsburgh, and installed in the Utilization Laboratory of the Portland Gas & Coke Company, Portland, Oregon. It was taken subsequent to a test upon impaired combustion resulting from water

coils installed over the top burners of a gas cooker. The gas sample is drawn through tubes to a motor driven blower which forces it through the rest of its course. The excess sample is wasted to atmosphere through the globe valve shown at the front of the table. From the blower it goes through sulphuric acid driers for removing water, hydrocarbons, ammonia, and other gases retained by sulphuric acid. Thence, the passage is through a cannister of charcoal, caustic, and cotton, which filters out foul gases, but permits air, carbon monoxide, hydrogen, methane, and some carbon dioxide to pass. The other gases do not affect operation of the apparatus for carbon monoxide determination under conditions maintained in test.

A water well permits adjustment of the rate of gas flow, an orifice type of flow meter with water manometer indicates the flow, and a water reservoir stabilizes flow. Next, the gases pass by calcium chloride to remove water vapor, and then to a gas heated steam bath automatically maintained at atmospheric pressure, where they are heated to 100 degrees C.

Thence, the gases pass through an insulated box, where they come in contact with forty-eight differential thermo-couples arranged in series on two mica sheets. Granular pummice stone surrounds the lower thermo-junctions and a specially prepared mixture of manganese dioxide and granular basic copper carbonate called hopcalite is in contact with the upper thermo-junctions and imparts to them the increased temperature due to chemical action. Then the gases pass to the exhaust, going by a container filled with calcium chloride to prevent entrance of moisture.

The voltage from the thermo-couples is communicated to the recording potentiometer, where a record showing per cent carbon monoxide is traced on a continuous time chart.

This method of CO analysis is the most accurate and sensitive yet devised for small concentrations of CO.

Recorders in the Gas Industry

The gas industry is believed to have at present three recorders similar to the one devised by the Bureau of Mines for use in vehicular tunnels. These are located in the National Laboratory of the American Gas Association at Cleveland, the testing laboratory of the Consolidated Gas Company of New York, and at the utilization laboratory of the Portland Gas and Coke Company, Portland, Oregon.

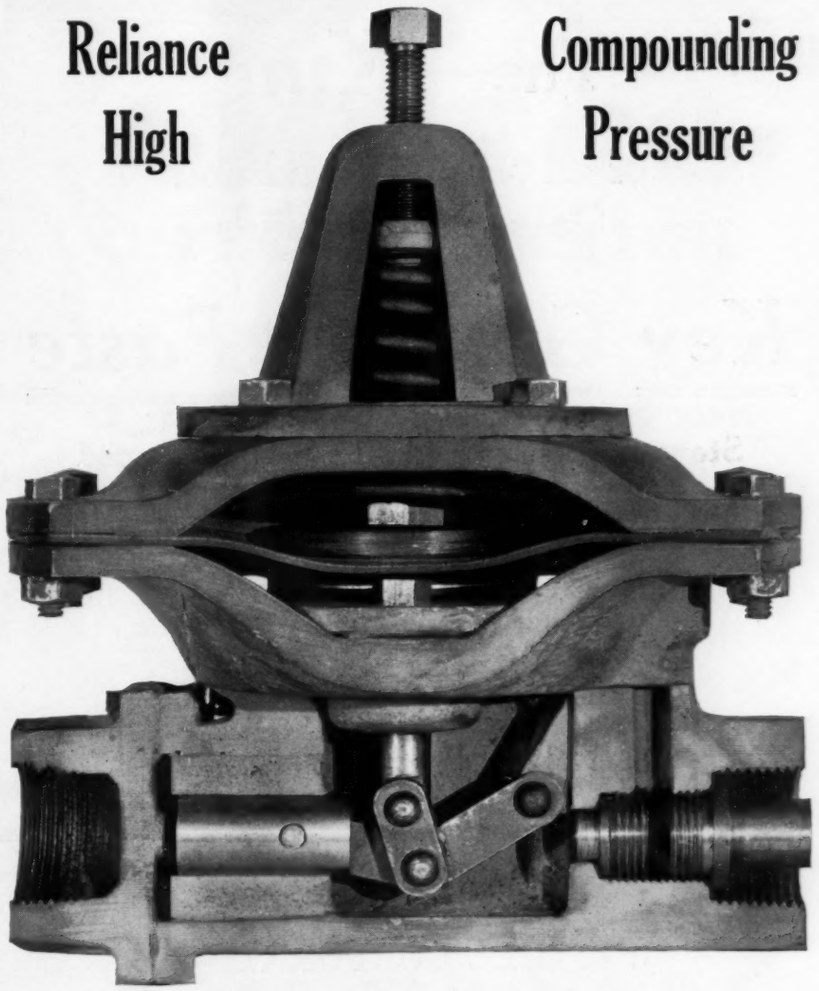
It is fortunate that the device is so adaptable to the work of studying appliance operation, because in this capacity it provides the means of immediately ascertaining and recording the pertinent combustion information which has formerly offered so much tedium, without even approaching the success possible with the new equipment.

The utilization laboratories of the gas industry are destined to mold the scope of our business in the years to come, and in the present realization of future responsibilities for progress, gas company executives display keen perception in promoting the development of labor-saving apparatus and equipping their laboratories with the latest facilities which further the art of appliance design and operation.

OIL ABSORPTION UNIT ADDED TO MARICOPA GASOLINE PLANT

New gas contracts in the Maricopa district completed by the Pacific Gasoline Company have called for additional equipment to the company's 31-E plant in that section. Another oil absorption unit has been added to the portable absorption equipment originally installed.

Reliance High Compounding Pressure



The Reliance Compounding High Pressure Regulator has now been tested over a period of a year under all conditions and pressures varying from 5 to 400 pounds inlet. We are prepared to furnish them in ¾ in., 1 in. and 2in. sizes, and can guarantee that for close regulation, positive lockup, accessibility and **capacity,** they are in a class by themselves.

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Made and Guaranteed by

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A Tropical Gas Works

(Continued from Page 17)

a Baker-Perkins travelling oven with a capacity of 3,000 loaves per hour. This installation is handled with a high pressure two-inch service, to a Chaplin Fulton regulator delivering one pound pressure to a Westinghouse high pressure meter.

The public utilities of these Islands are under the control of a utility commission similar to the Railroad Commission of Calilfornia, and for the past two years the Honolulu Gas Company, Ltd., has had the benefit of the sliding scale rate due to the change in the price of oil.

It would be impossible to close this article without commenting on the climate of the "Paradise of the Pacific," particularly after reading a feature in the March issue written by Mr. Finley, of the *Western Gas* staff, inspired by notes coming from that perspiring-go-getter, S. P. Vecker of the Panama-Colon Gas Company.

The southernmost tip of the Island of Hawaii touches the 18° parallel North latitude, while the most northern point of the island of Kauai touches the 22nd parallel North latitude. This would ordinarily mean a warm climate if it were not for the continual northeast trade winds that gently cool the Islands, so that the mean temperature for 1924 was 74.6° F. with an absolute maximum of 82.4 F. and an absolute minimum of° 67.1° F.

The rainfall on the Islands varies from an average of 26 inches at Honolulu to over 350 inches in the upper lands of the island of Hawaii.

The total area of the eight principal islands is 6,449 square miles and the two largest industries are sugar and pineapple culture. The island of Hawaii has two large mountains. Mauna Kea with an elevation of 13,800 feet and Mauna Loa with an elevation of 13,700 feet. Mauna Loa is the active "tame" volcano, at present in eruption, and from the upper crater of which molten lava is now flowing down to the sea. On the side of Mauna Loa is the volcano Kilauera, 4,000 feet above sea level. Its crater "Halemaumau" is the most awe-inspiring sight imaginable. At present this crater is empty, the lava having run out in 1924, but due to the activity of Mauna Loa it is confidently expected that the lava will return to "Halemaumau" at any time. The writer in 1922 sat on the brink of this huge hole and saw the molten lava swirling and flowing and fountaining some 200 feet below. Shortly after, it rose to the top and spilled over and then began a gradual settling until the pit was entirely empty. This is one of the big drawing cards for tourists, but every island is different and has its own wonder spots. Tourists come

to see and invariably wish to stay. In my five years in the Islands, I have never seen a tourist depart without the statement that "sooner or later, Hawaii nei will call me back."

Now *for the* Convention

(*Continued from Page 25*)

on arrangements, plans are taking form for all of the indispensable details of entertainment which go to make up a successful convention. Appointments have now been made for the general committee personnel, and Mr. Thompson has the able assistance of H. J. Kister (Los Angeles Gas and Electric Corporation), Norman McKee (Southern Counties Gas Company), Frank Bivens (Southern Counties Gas Company), and F. C. Ingram (Southern California Gas Company).

Special Trips Scheduled

While it is too early to make final announcement of the program of entertainment enough is known to assure convention delegates that the Pasadena sessions will be the high point of the summer. This year golf tournaments have been arranged for both the men and the ladies, and two special scenic trips, to Mt. Lowe and to Catalina Island, are also on the calendar.

Further announcement of program and entertainment features will appear in *Western Gas* for July, and our special Pre-Convention Number of August will contain the complete program, arranged for ready reference during the sessions.

Handling Lampblack

(*Continued from Page 23*)

stay on the job, resulting in an expensive labor turnover.

The above method is also very clean. The lampblack is never handled by manual labor until it is fired. Conveyed to the boilers in elevators, not a particle is spilled, leaving the yard clean, a condition so much desired and so little attained by gas plant operators.

The greatest advantage of this process is its reduced cost of operation. The cost by the old method, of delivering lampblack to the bins in the boiler plant, was $6,928 per year. The cost by the new method, and handling a considerably larger output of lampblack, is $4,392 per year, or a net saving in handling costs of $2,536. Since the new apparatus cost but $8,415, it will, outside of overhead, etc., charges, pay for itself in a little over three years.

The process has been favorably commented on by several firms making filtering apparatus and specializing in lampblack recovery and on account of its simplicity, and initial and maintenance low costs, should be investigated by all operators employing two or more laborers engaged in lampblack recovery.

FRANK C. PACKER RETURNS TO COAST FROM TULSA MEETING

Frank C. Packer of the Welsbach Company returned to the Coast late in May from Tulsa, Okla., where he attended the sessions of the Natural Gas Association.

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HERE'S a specialized refractory ... developed in our own laboratories ... with high resistance to spalling and disintegration. ¶ The marked ability of Amreco Checker Brick to absorb heat and liberate it ... due to being the proper density ... is a feature which appeals to gas men. ¶ Amreco shows little shrinkage and is very durable under intense heat and severe service.

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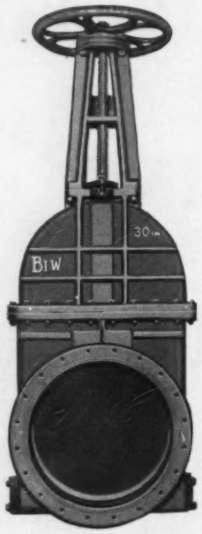

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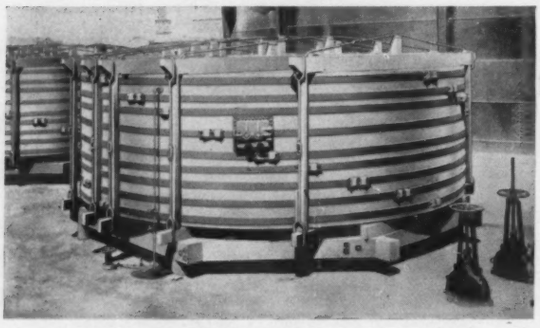

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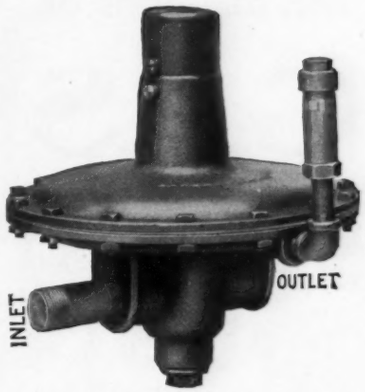
FULTON
Sensitive Service Governor
(SPRING STYLE)



Gives any desired delivery pressure regardless of Pressure fluctuation at inlet

THE FULTON Sensitive Service Governor is opened by a spring instead of lever and weight. This spring is constructed of special material and of a new design—it will not break or lose its elasticity. A simple turn to the right or left of the adjustment screw will give any desired pressure from 2 inches water to 6 ounces. The spring case can then be locked and sealed against tampering persons.

The FULTON Sensitive Service Governor (Spring Style) is particularly adapted for use on high pressure service lines connecting users directly with high pressure mains. It is extremely sensitive. Will control any intake pressure up to 100 lbs. and give any desired delivery, with practically no variation, no matter how greatly the inlet pressure may fluctuate.

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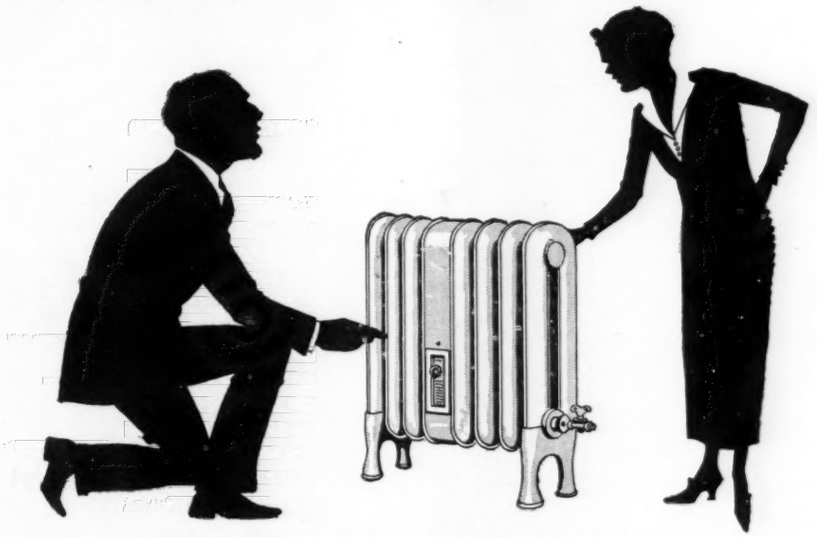

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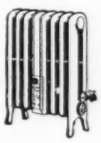

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